JOURNAL
of the American Medical Association
Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 1
CHICAGO, ILLINOIS
JANUARY 5, 1952

COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION

FUTURE OF OPHTHALMOLOGY

CHAIRMAN'S ADDRESS

ACC. NO. 14366

Robert J. Masters, M.D., Indianapolis

In these days of political, diplomatic, and economic confusion, when the future is uncertain and unpromising for the world, our country, and all of us as individuals, it is pleasant to contemplate the future of ophthalmology. There are many quite substantial reasons to believe that the future of medicine and ophthalmology is filled with the promise of advancement, in spite of the uncertain and discouraging present general outlook. These substantial reasons for the anticipated good future of ophthalmology are based on the firm foundation of accomplishment which was built for us in the past and the imposing superstructure of advancement which has been erected during the present generation. The foundation has proved strong enough and the more recently developed superstructure is surely built well enough for the two of them to support even greater heights of building in the time to come.

The past history of ophthalmology, which reaches back into the distant centuries, is romantically interesting. Surgery for the cure of blindness due to cataract was performed for centuries before the anatomic nature of cataract was known to the operating surgeon. Celcus, whose life began in 25 B.C. and ended in 50 A.D., is a good representative of the ancient ophthalmic surgeon. His writings included descriptions of the surgical treatment of chalazion, pterygium, lacrimal abscess, and eyelid deformities, in addition to cataract. His discussions of surgical treatment, like those of the other ancient writers, are impressive even today because of their unmistakable expression of meticulous care in the preoperative preparation and postoperative treatment of the patient, as well as in surgical procedure itself. Furthermore, although we moderns may be inclined to tolerant amusement when we read about some of the therapeutic agents employed by those ancient physicians, the fact remains that they were doing the best they could with what they had available. Their methods were built on a combination of superstition tempered by intelligence and scanty knowledge augmented by serious, conscientious, painstaking effort. We should honor them for what they accomplished with what they had to work with and wonder if we are doing as proportionately well today as they did then. They laid at least a few stones in the foundation of our own future for ophthalmology, even though this foundation was substantially completed in the more recent past.

The recent past of our specialty began 100 years ago, with the development of the ophthalmoscope by Hermann Ludwig von Helmholtz. The modesty of this great man was impressive in his announcement of his great gift to ophthalmology in a short, carefully worded treatise which he simply titled "Beschreibung eines Augenspiegels" ("The Description of an Eye Mirror"). Most ophthalmologists consider the ophthalmoscope the greatest single gift to the armamentarium of their specialty, and it is inspiring to think about the clinical findings and reports which fairly tumbled over one another into the literature during the first 10 years after 1851. Von Helmholtz's forecast of the clinical promise of his "eye mirror" proved to be modest indeed, since the study of opacities in the media and pathological changes in the eyeground revealed in the living eye a vast number of pathological changes which had previously been only occasionally seen under the microscope in the laboratory. Bowman of England, Donders of Holland, and von Graefe of Germany, that brilliant triumvirate of young ophthalmologists whose lifelong friendship began in 1851, were among the first to accept the ophthalmoscope and record their clinical findings with it. But the acceptance of this great advance in diagnostic procedure was not immediately universal.

Sir William Mackenzie of Scotland was one of the great clinicians and teachers in 1851. For many years his "Practical Treatise on the Diseases of the Eye" had been a textbook of note. His chapters on retinitis, choroiditis, optic nerve involvements, and melanosis of the globe were beautifully written and impress the present-day reader with their comprehensive discussion of the symptoms, general physical relationships, and microscopic pathology. But without benefit of ophthalmoscopic pictures, they were pitifully lacking. Yet, in spite of this deficiency, which he must have realized more keenly

---

Read before the Section on Ophthalmology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

many of his contemporaries, Mackenzie did not immediately use the new "eye mirror."

It is not certain why Mackenzie, as well as an appreciable number of his colleagues, failed to promptly use the new instrument. One reason may have been that he feared damage to the retina from concentrating rays of light on it. On the other hand, he may have simply been a conservative, cautious about falling in line with new ideas until they had proved worthy. In 1711, a little more than a century before Mackenzie's time, the great English poet Alexander Pope wrote his masterful "Essay on Criticism." Among other notable phrases, it contained these two: "Be not the first by whom the new is tried, nor yet the last to lay the old aside." Since these words are rather generally familiar today, it is probable that Mackenzie knew them also. In any event, he was not among the first by whom the new ophthalmoscope was tried. However, he was not the last to lay aside the old handicap of attempted clinical examination without the aid offered by the new instrument, since it was he who first described the papilloretinitis of Bright's disease in 1859. Although he was cautious and conservative (he was 60 in 1851), his greatness was proved by his not too tardy acceptance of the new instrument.

Pope's admonition apparently has mixed merit. Conservative men are needed to temper the enthusiasm and balance the activity of those who try the new, but if we [illegible] not have the latter there would be nothing new. The research workers, who are constantly exploring new fields [illegible] knowledge and the clinicians who have the courage to carefully and sagaciously try new therapeutic agents and surgical procedures are essential to our progress.

In addition to the ophthalmoscope, instruments produced during the earlier half of the past 100 years were those which made it possible to study visual acuity and central and peripheral visual fields and to estimate intraocular pressure by reasonably accurate measurement of ocular tension. These instruments also came to us from our colleagues overseas. The first clinically practical arc perimeter was contributed by Richard Förster in 1857. Albrecht von Graefe introduced a wooden tangent screen in 1855, although the use of this type of instrument did not receive much attention until Bjerrum developed and popularized his cloth screen in 1889. Heinrich Küchler described the first test types in 1843, the same year in which the trial case of lenses was invented by a general practitioner named Fronmüller. Küchler's types were employed only for testing the near vision. Jaeger published a complete collection of test types in 1854, and in 1855 Stellwag von Carion was first to state on his test card the distance at which each row of letters should be seen by a normal eye. Then in 1862 Herman Snellen of Holland devised the first scientific standardization of test types and central visual acuity. The impression tonometer of Hjal-[illegible]ar August Schiötz was developed (and proved more satisfactory than others) during the first quarter of the present century.

It is not the purpose of this paper to elaborate on the progress which began 100 years ago. Frederick H. Ver-[illegible]oeff's excellent address, titled "American Ophthalmology During the Past Century" and delivered before the [illegible] on Ophthalmology in 1947, has thoroughly cov-[illegible] developments of this period. But some of the developments of the [illegible] mentioned. The establishment of special chairs for ophthalmology, with the first professorship that of Elkanah Williams at Miami Medical College in 1860 forecast the improved teaching of ophthalmology during the latter half of the 19th century. Also helpful in the educational program was the writing or editing of textbooks by H. W. Williams of Boston, Henry D. Noyes and John E. Weeks of New York, G. E. de Schweinitz and Norris and Oliver of Philadelphia, Casey A. Wood of Chicago, and Edward Jackson of Denver. Supplementing the educational service of the textbooks, several ophthalmic journals were founded during the late 19th and early 20th century. Some of these were rather short-lived; others continued their publication for 25 to 30 years. It can be confidently said that each one of them served a purpose in furthering ophthalmic education by publishing reports of new developments and reviews of established information, with some of the latter accompanied by case reports.

The exchange of information was also encouraged by the organization of special societies. The American Ophthalmological Society, first called the American Ophthalmological Association, held its first meeting at the New York Eye Infirmary on June 7 and 8, 1864. It thus became the first special medical society in our country. The serious purpose of its founding group was indicated by their appointment of Dr. B. Joy Jeffries of Boston to report at the second meeting on the progress of ophthalmology and the appointment of a committee to decide on a suitable subject for discussion at the ensuing meeting. A section for ophthalmology, otology, and rhinology was established by the American Medical Association in 1878, and 10 years later our own special Section on Ophthalmology came into existence. The American Academy of Ophthalmology and Otolaryngology, called by its present name since 1903, was first organized in 1896 and has for many years enjoyed an increasing reputation for its educational activities. Although organized more recently, within our own generation, The Association for Research in Ophthalmology should be included here among the great national societies devoted to our specialty. Founded in 1929, through the pleasantly persistent efforts of Conrad Berens of New York, its importance has steadily increased. There is no doubt that its sessions, held jointly with those of our section this year for the first time, thoroughly impressed everyone present and assured the Association for Research of an immediate growth in its membership.

The science of bacteriology was founded by Louis Pasteur and Robert Koch, with Pasteur pioneering the modern theory of preventive inoculation and Koch developing the correct theory of specific infectious diseases. With Robert Koch our own American ophthalmologist, John E. Weeks, became co-discoverer of the Koch-Weeks bacillus. The microscope which Dr. Weeks used for this important work now occupies a place of honor in the living room of his nephew, Dr. Carroll Weeks of Los Angeles, who is also an ophthalmologist. The work of Pasteur was practically applied by Lord Joseph Lister when he introduced surgical antisepsis, from which surgical asepsis soon developed. The principles of Listerism were adopted by the ophthalmologists in their surgical procedures and in the treatment of ocular infections, with the result that many an eptics were developed and given trial. Most of these ha been long since discarded, but some of the earliest of em are still in fairly general use. A good example of the atter group is bichloride of mercury, which was one o he earliest antiseptic agents employed by Lister and still in general use in White's ophthalmic ointment.

Ranking even higher han antiseptics, among the therapeutic agents which we developed in the 19th century, were general and loca anesthetics. Dr. Crawford Williamson Long of Georg first used ether as a general anesthetic in March, 184 but made no report of his first or later experience w h it. William Thomas Green Morton, a dentist of H rtford, Connecticut, first used chloric ether and then lphuric ether in 1844, having first had some experie e with nitrous oxide gas. The discovery of ether anest sia was formally announced in a paper written by Her J. Bigelow and published in the *Boston Medical an Surgical Journal* on Nov. 18, 1846. Because Morton h d made known his experiences with ether anesthesia a had promptly carried its use into the surgery of Mas chusetts General Hospital, he has received the credit f discovering ether anesthesia, which is still the safest kn wn form of general anesthesia.

Although general ane hesia provided revolutionary aid to the patient and s geon for all types of general surgery and for some phthalmic operations, much greater benefit came to e surgery from Carl Koller's introduction of cocaine a local anesthetic in 1884. Cocaine was discovered 2 ears before by Gaedcke, with subsequent studies of its operties by several independent investigators, but it re ined for Koller, an American then studying in Vienna, clarify its practical application. It was immediately ad pted by ophthalmic surgeons everywhere, applied topica y and by subconjunctival and retrobulbar injection. Oph almic surgery thus came into a new era of progress, repl cing the old days of horrifying experience for both th patient and surgeon, when operations had been perfor ed without benefit of anesthesia and with only opium r alcohol to generally numb the poor patient's senses.

There is a chapter on ca aract operation in the 1833 American edition of Willia Mackenzie's textbook, in which the author carefully escribed the stations to be taken by several assistants one of whom held the patient's head in firmly fixe position, while others held the arms. The assistant at he patient's head used two fingers to elevate the upper yelid, leaving the finger tips free to touch the globe an "scare" it back into downward rotation in case it sh uld roll upward during the course of the operation. A of us who have experienced the pain produced by a f eign body under the upper eyelid must shudder in w nder when we think of what the patient and surgeon ent through in those preanesthetic days. In contrast t this, I and many of the other older physicians have q te satisfactorily, and with a minimum of discomfort t the patient, performed many cataract operations with o anesthesia excepting that provided by five or six in llations of 4% cocaine solution.

Most of the surgeons in t e early days of cocaine were satisfied to employ the dru b topical application, but some of them injected it in mall quantities and moderate strength, even before suprarenal extract mixed with cocaine made the injection safer. Some tragedies resulted from cocaine poisoning. Then procaine hydrochloride (novocaine®) was introduced by Alfred Einhorn in 1905, and a safe anesthetic for injection had completely removed the horror of painful eye surgery. As time has passed we have learned that any local anesthetic which is effective by topical application is too toxic to inject and that, conversely, any anesthetic which is safe to inject will not be effective by topical application.

As would be naturally expected, the advent of satisfactory anesthesia was immediately followed by rapid advances in ophthalmic surgery. Improvements in the old procedures and development of new ones changed the status of eye surgery to a modern standard, and its progress has been uninterrupted ever since. It would be well for self-satisfied present-day surgeons to study this period of progress during the half century which preceded the present generation. They would be profoundly impressed by the accomplishments of their predecessors, and they would be more modest about their own. In his 1947 address before the Section on Ophthalmology, Verhoeff reminded us that Henry W. Williams of Boston employed a corneal suture in cataract operation and described it in 1866. Round pupil cataract operations were being performed by my father 50 years ago.

Therefore, as I come to a brief consideration of the accomplishments of the present generation of ophthalmologists, it will be well to briefly mention ophthalmic surgery first, and describe it with the comment that progress has continued as should have been expected. The teaching and example of the men who preceded us demanded that we improve our surgery. The improvements that have been made should have been made. They are based on constantly increasing knowledge of anatomy, physiology, and pathology; increasingly accurate employment of local anesthesia; better suture materials; improved lighting of the operative field; ingenious design of instruments; uniformly improved aseptic technique; more scientific and thorough preoperative study and preparation of the patient; constantly sustained effort to improve the surgical technique itself; and careful postoperative supervision. We must leave the evaluation of some of our current operative procedures to those who will follow us in history. However, there is no doubt that the majority of those who will immediately follow us are being much better taught how to operate than were most of us who were trained 25 to 30 years ago.

It is in the teaching of ophthalmology, especially in the training of new ophthalmologists, that this generation has made outstanding progress. Departments devoted to ophthalmology have long since become fixtures in all our medical schools. The instruction of undergraduates in the fundamentals has reached a state of uniform efficiency. One notable feature of undergraduate training has been careful instruction in the use of the ophthalmoscope as an aid in general diagnosis. This type of instruction has been carried on in most medical schools, through the cooperation of the departments of medicine and ophthalmology, for the past 15 or more years. F[illegible]thermore, one seldom finds a recently graduated practitioner who mistakes an attack of acute glaucoma for a "bilious" attack.

The greatest advance in ophthalmic teaching during this generation, however, has been in the improved training of new ophthalmologists. A few schools of medicine have organized basic courses of instruction which extend through a period corresponding to the average undergraduate year. Dr. Walter Lancaster, assisted by the late Theodore Terry and advised by a large committee of experienced teachers of ophthalmology, has done great work with the intensive three-month course of the Ophthalmological Study Council. Dr. Lancaster recently resigned from the direction of this course and has been succeeded by Parker Heath, another teacher of extensive experience. But the most encouraging teaching development has consisted of the postgraduate training provided by hospital residencies.

Counseling with one another, benefiting by the teaching experience of their colleagues, and aided by the hard work of their departmental staff members, the department chairmen of almost all schools of medicine have been able to set up satisfactory residency training programs. Some of these residencies are longer than others, some are older and better organized than others, and some are manned by more brilliant teachers than others, but that most of them are giving adequate training is indicated by the showing of their trainees when they appear for examination by the American Board of Ophthalmology. There is no doubt that the average train- of an ophthalmologist today is inestimably better the average training 25 years ago, and there is y indication that it is continuing to get even better. th the American Board of Ophthalmology undoubtedly an important stimulating factor in this improvement. Ideally, the teaching department of ophthalmology should be associated with a medical center and its hospitals, thus giving opportunity for reciprocal consultation with the staff members of other departments, but with separated surgeries devoted to eye surgery only and with a special location assigned for eye patients in the hospital. Such an arrangement is also of great advantage in the pursuit of research, which is a rapidly growing part of the program in all our schools. Access to the departments of anatomy, physiology, biochemistry, bacteriology, and pathology is essential to the research worker, as well as to the teachers of residents in training.

The Archives of Ophthalmology, edited by Francis Heed Adler, and the *American Journal of Ophthalmology,* edited by Derrick Vail, are well known to all of us for their excellence. Along with the rapidly increasing number of well-prepared modern textbooks, they are serving in the educational program of the present generation. And the special societies are carrying on, increasing in productiveness.

The most important new instrument of this generation is the slit lamp and biomicroscope. Its brilliant slit-beam illumination, with stereoscopic vision supplied by its binocular microscope, has made clinical observation of the anterior eyeball segment comparable in efficiency with ophthalmoscopic observation of the eyeground. Both nstruments give us the means to examine living tissues; mal or pathologically changed or embryologically developed. The binocular ophthalmoscope has with its stereoscopic view of the eyeground. The Freidenwald ophthalmoscope, with sufficient illumination to give useful red-free fundus examination and with its slit illumination available for observation of the eyeground through a miotic pupil, has also been a valuable addition. The contact glass and Allen prism have permitted visualization of the anterior chamber angle, adding this hitherto invisible area to the structures of the eye that are available for clinical study.

New therapeutic agents have changed entirely the management and prognosis of ocular disease, injury, and postsurgical complication. Insulin, liver extract, antibiotics, vitamins, hormones, and improved antiseptics are all too well known to require lengthy discussion. Despite the limitations, failures and occasional contraindications of the use of the antibiotics and corticotropin (ACTH) and cortisone, these drugs are saving eyes as well as lives that would have been lost before their discovery. Some of them still present a very important medicoeconomic problem. A note recently went out to the department chairmen from our Medical Director at Indiana University Center calling attention to six prescriptions for these new drugs which were given by members of the resident staff to patients going home from the hospital. These prescriptions cost the hospital from $27 to $141. The letter of the Medical Director was quite gently worded, under the circumstances, but the pharmacy budget of any of our institutions can well be strained by such a pull on it. It is hoped that this item of expense may right itself as production advances, just as it did with insulin and liver extract.

No doubt many have long since wondered why so many words have been used in the preceding lengthy review of the past and present of our specialty, when the title of this paper was announced as the "Future of Ophthalmology." However, these many words have aimed to establish the premise of this paper, which is firm confidence in the good future of ophthalmology.

I have spoken of textbooks, journals, teaching departments, and ophthalmological societies, all directed toward ophthalmic education; of therapeutic agents and diagnostic and surgical instruments for improving the examination and treatment of the eye; of research that has steadily gained headway in the clinics and laboratories; and of advances in surgical treatment. All these elements of the progress of ophthalmology were the products of the efforts of men. For this reason, the names of many of these men were mentioned in this paper. Men accomplished the advances of the past, and men are producing the advances of the present. The young men of today, and those whom they in turn will train to follow them, are in charge of the future of ophthalmology.

The young men of today are more thoroughly trained as a group than were we who will be bowing out of action before long. These new men, benefiting by the training which they have received, stimulated by association and exchange of information with their colleagues at meetings, and inspired by the accomplishments of their predecessors, will take over the future of ophthalmology. The future of ophthalmology is in competent hands. Therefore, in these days of general uncertainty and confusion and lack of promise, it is pleasant to contemplate the future of ophthalmology.

23 E. Ohio St.

MALNUTRITION AND ANEMIA IN YOUNG CHILDREN

CLINICAL STUDY OF FIFTY CASES

Julian P. Price, M.D.
and
Walter More Hart, M.D., Florence, S. C.

Over the years we have seen a pronounced improvement in the general care and well-being of babies in this section of South Carolina. This improvement is consistent with that observed throughout the southern states, which is reflected by infant mortality statistics. However, we have also noted the number of malnourished and anemic children between the ages of 1 and 4 who continued to come to our office. Usually every week one or more of these youngsters would be brought in. They were not sick enough to be put to bed, nor were they well enough to romp and play as other children. They were simply tired, irritable children who were a joy neither to themselves nor to their families.

This study was instituted to determine, if possible, not only the immediate cause of this malnutrition and anemia but also the remote cause, the general environment of these children, the type of homes, the care they received during infancy, their eating habits, and the type and amount of medical care they had received. In this way we hoped to learn how this condition not only could be cured but could be prevented.

That this is not a complete, thorough study we readily acknowledge; but, however, when it is realized that the study was made by two practicing pediatricians with their regular office personnel, as a part of their everyday practice, perhaps the deficiencies will be found excusable. No effort was made to secure special children for the study. They were the usual patients who are brought to a pediatrician's or general practitioner's office. Five were referred by other physicians; the others were brought by parents of their own accord; some came with appointments, many without.

METHOD OF STUDY

When quick appraisal showed that a child belonged in the group under study, a detailed history was taken by one of the nurses on a specially prepared form. If possible, and usually it was not, a specimen of urine was obtained and examined. The child then received a physical examination, and a blood study was made. The mother was requested to have a specimen of stool examined for ova. Detailed instructions for the treatment were given the mother, and the parents were requested to bring the child back to us in three weeks for further observation.

We realized that possibly other studies should be done if criticism of our study was to be avoided. We considered making routine tuberculin tests, but found that the readings of reactions by the parents were more confusing than helpful and that the family physician was not being consulted for confirmation. To secure blood for serological tests from every child would have been no simple task, and 20-odd years of practice with this type of patient had shown us the low incidence of congenital syphilis. So we adopted the procedure outlined, believing it would give us the desired information and at the same time would not entail more work than we could do in the office.

RESULTS OF STUDY

Sex and Age.—The 50 children were divided equally between boys and girls. Forty-eight were white and two were Negroes (only a small percentage of the children in our practice are Negroes). The youngest child was 13 months of age, the oldest 42 months. The distribution by age groups in months was as follows:

12-17	22
18-23	16
24-29	5
30-35	5
36-41	1
42-43	1

Family Background.—Siblings: Twenty-five of the 50 were the only children in the family. Of the remainder. 20 had older brothers or sisters and 3 had younger. Five had both older and younger siblings. The largest family encountered was one of 10 children, of which the patient was the youngest.

Father's Occupation.—The various occupations of the fathers of these children and the number in each occupation are given in the following tabulation.

Farmer	18
Laborer in industrial plant	14
Salesman	4
Railroad employee	3
Truck driver	2
Merchant	1
Clerk in store	1
Navy	1
Army	1
Auto mechanic	1
Electrician	1
Engineering assistant	1
Bookkeeper	1
Dead	1

Financial and Intellectual Status: Three of the families of these children were evidently on a near-indigent level of existence, finding it difficult to procure the type of food and care the child should have had. The families of 40 of the children appeared to be able to afford the usual necessities of food, shelter, and care but not many luxuries. Seven of the fathers seemed to be in better than average financial circumstances.

Four of the mothers gave the impression of low intellectual capacity; we used the simplest words in talking to them and wondered whether our message was actually understood. Thirty-six appeared to have had at least a grammar school, if not some high school, education. Ten of the fathers and mothers belonged to the better-educated class. The ages of the parents when the children were born is shown in Table 1.

Place of Residence and Physical Environment: The children came from 26 different communities scattered through nine counties. The largest number, nine, lived in Florence and its rural environs.

Most of the children lived in frame houses, a few in brick buildings, and one in a trailer. One of the homes was heated by open fires, the rest by stoves or furnaces (21 by oil, 15 by coal, 10 by wood, and 3 by gas). Forty-six of the homes were screened, and 48 had some type of refrigeration (43 had electric refrigerators, 5 had ice boxes). There were inside toilets in 28 homes. Twenty had bathtubs and one a shower bath. The water supply of 26 families came from city mains and of 18 from deep wells, leaving only 6 who drew their water supply from surface wells.

Birth and Development.—Forty-seven of the children were born at full term, three were born three to four weeks prematurely. One was delivered by cesarean section, the others normally. No complications were reported in the mothers and no neonatal difficulties in any of the babies. All of the babies were sitting alone before they were 8 months of age. All but three were walking alone before 16 months. Of the three, two had started to walk at 16 and 24 months, respectively, and one, aged 19 months, was still unable to walk alone. The age at which the first tooth appeared ranged from 4 to 12 months. It was difficult to secure accurate data with regard to talking, since some of the mothers could not recall when the baby first began to use words, but the age varied from 9 to 18 months, except for one child, who did not start talking until 28 months of age.

TABLE 1.—*Age of Parents When Children Were Born*

Age, Yr.	Number of Parents: Fathers	Number of Parents: Mothers
17-20	0	14
21-25	18	16
26-30	17	12
31-35	6	5
36-40	5	2
41-48	4	1

As two simple examples of cooperative learning (an act learned by the child with the encouragement and help of the parent), we selected the baby's ability to hold the bottle for himself and to feed himself with a spoon. Ten children reached the age of 1 year without having learned to hold the bottle, and six (the oldest aged 20 months) were still having the bottle held for them when we first saw them. Only five had been taught to use a spoon before 1 year of age, while nine had not acquired this ability until they were 18 months old. The usual age at which these children started feeding themselves was from 14 to 18 months.

A pacifier had been used by 26 of the children, and 8 had sucked their thumbs. One-half of the children slept in cribs by themselves, and 23 slept with a sibling or a parent. Two shared the bed with grandmothers. All but three were being fed in a high chair; these three (aged 14, 15, and 24 months) were still being fed in their mothers' laps. Forty were allowed to play in the yard, [illegible] still had their activities confined to the house.

Medical Care.—The mothers of 25 (50%) of the children stated that they had taken their babies to a physician for routine examinations at regular times, usually at one to two month intervals, for the first year. The other 25 said they saw the physician when the baby was sick, but when they were asked the specific question "Who is first consulted when the baby is sick?," 10 acknowledged that someone else was called in before the physician, usually the grandmother. Parenthetically, it might be noted that many of these children lived in communities where well-baby clinics were conducted by the local health department, but only three of the children had been taken to them.

Our questionnaire contained a specific question on home medication (drugs given by the mother or grandmother of her own accord). The following tabulation shows the drugs or preparations that had been employed:

"Castoria"	44
Milk of magnesia	37
Teething powders	22
Castor oil	9
Anthelmintic	5
Calomel	2
Quinine	2
Protoiodide of mercury	1
Syrup of pepsin	1
"Soothing syrup"	1

The tabulation shows that laxatives were the principal drugs used. Most of the mothers said the medicine was given only when the baby was constipated, which was often in these cases. One mother acknowledged that she gave milk of magnesia every night, and another stated that she administered castor oil to her baby twice a week.

Immunizations and Illnesses: The percentages of the children who had received the routine immunizations of infancy were as follows: 64% had received immunizations for pertussis; 62% for diphtheria; 58% for tetanus; and 14% for smallpox.

The diseases or conditions reported by the mothers as a part of the child's history are shown in the tabulation following, with the number of children having each disease.

Diseases or Conditions		Number of Children
Colds		48
Diarrhea		27
Bronchitis		19
Diaper rash		15
Worms		6
"Stomach worms"	5	
Pinworms	1	
Sore mouth		3
Whooping cough		3
Chicken pox		3
Pneumonia		3
Running ears		2
Convulsions (febrile)		2
Mumps		1
Influenza		1
Malaria		1
"Strep throat"		1
Jaundice		1
Impetigo		1
"Bad heart"		1
Epilepsy (?)		1

Nutritional History.—Milk: Seventeen of the children received no breast milk, and 13 more were weaned before they were 1 month of age, making a total of 30 (60%) who were denied the benefit of breast milk. Eleven were nursed at the breast for six months, and three were still nursing (aged 14, 15, and 19 months) when we first saw them. When we saw them, 41 of the children were still getting their milk from a bottle (the two oldest being 39 months and 42 months old). Two others had been weaned from the bottle at 16 and 22 months of age. Adding this group to those who were still nursing the breast, we found that only three (6%) of the 50 children had been given their milk from a glass or cup before the age of 16 months. The amount of milk these children received in 24 hours ranged from 16 to 48 oz. (500 to 1,500 cc.), with the majority receiving four bottles of 8 oz. (250 cc.) each daily.

Thirty of the babies had been started on an evaporated milk formula, eight on raw or boiled cow's milk, seven on one of the evaporated milk preparations with added vitamins, and two on powdered milk. As the babies grew older some were changed from one type of milk to another; several were changed from evaporated milk to cow's milk, one from cow's milk to goat's milk, and one, in an effort to effect growth, successively from evaporated milk to powdered milk to a soybean preparation to lactic acid milk.

Foods Other Than Milk: The mothers of 43 children claimed to have started their babies on orange juice at 4 to 6 weeks of age. On further questioning, a number acknowledged that the babies did not seem to like the orange juice, and it was discontinued or given sporadically. Forty-five of the children had been given cereal, 42 fruit, 37 meat, and 45 eggs. These foods were usually started between the fourth and sixth months of life, but many parents stated that one or more of the foods was stopped because "the baby didn't like the taste."

Vitamins: Supplementary vitamins had been given to 47 (94%) of the children (cod liver oil or percomorph liver oil in 21 instances and multivitamin drops in 26). Administration of the vitamins was started between the fourth and sixth months of life. Six babies received the drops for less than a month and nine more for less than six months. The mothers of 35 babies said that they had given some vitamin preparation, with more or less regularity, up to the first birthday.

Eating Habits: In an effort to secure specific information relative to the child's eating habits, we asked each mother to tell us the exact foods the child had received the day before coming to our office. The answers were not only revealing but, in several instances, startling. The following examples illustrate a day's diet for three of these children:

Case 1, age 15 months
Breakfast—breast milk
Dinner—breast milk
Supper—breast milk

Case 15, aged 18 months
Breakfast—toast, bacon
Dinner—rice and gravy
Supper—grits and butter
Between meals —milk from a bottle

Case 49, age 14 months
Breakfast—grits, toast, coffee
Dinner—rice, macaroni, meat
Supper—crackers
Between meals—milk from a bottle

Physical Examination.—A few of the children were brought to us for some condition unrelated to their malnutrition and anemia (respiratory infection, vomiting, impetigo, or loose stools), but the majority were brought because the parents sensed that something was wrong in the child's growth or development. The specific complaints are shown in Table 2. The following abnormalities were noted by us in the course of the physical examinations:

TABLE 2.—*Specific Complaints as Presented by Parents*

Complaint	Number of Children
Won't eat	45
Weak, Tires easily	15
Restless at night, Poor sleeper	14
Nervous, Cross, Cries a lot	12
Frequent Colds	8
Constipated	7
Pale	7
Doesn't gain	3
Eats dirt, Eats rubber	3
Not walking yet	1
Gags on solid food	1

Pallor	41
Poorly developed muscles	36
Underweight	21
Rickets (clinical)	12
Sallow complexion	7
Enlarged cervical lymph nodes	4
Long hair (boys)	3
Carious teeth	2
Palpable spleen	2
Cardiac murmur (hemic or functional)	2
Fecal impaction	1

Blood Findings: Hemoglobin determinations (Haden-Hausser hemoglobinometer) were made for all the children. The lowest reading was 4.7 gm. (31%), and the highest 10.5 gm. (69%). The complete results are shown in Table 3. The average hemoglobin reading for the entire group was 8.4 gm. (55%). We considered a normal hemoglobin value for this group to be 11.5 to 12 gm. (76% to 80%).

TABLE 3.—*Results of Hemoglobin Determinations*

Hemoglobin Value, Gm.	Number of Children
...- 4.7	1
5.0- 5.5	2
5.5- 6.0	1
6.0- 6.5	2
6.5- 7.0	3
7.0- 7.5	3
7.5- 8.0	4
8.0- 8.5	2
8.5- 9.0	6
9.0- 9.5	10
9.5-10.0	9
10.0-10.5	7

In 41 instances a complete blood count (erythrocytes, leukocytes, and differential) was made. The number of erythrocytes varied from 2,530,000 to 6,000,000, but we attached significance to these counts only as they were interpreted in terms of the color index, which varied from a high of 1.2 to a low of .34. The child with the extremely low color index had supposedly been given "eight shots of liver," but no iron for his anemia, and had a red cell count of 6,000,000 with a [illegible] value of 6.25 gm. (41%).

The following tabulation of the color indexes shows the number of children in each index range:

0.3-0.4	2
0.4-0.5	11
0.5-0.6	3
0.6-0.7	7
0.7-0.8	9
0.8-0.9	5
0.9-1.0	1
1.0-1.02	3

The erythrocytes showed moderate microcytosis and marked hypochromia in most of the cases. No malarial parasites were observed. The leukocyte counts were within normal limits in all but 10 patients, who showed leukocytosis (over 14,000). Six of these could be accounted for on the basis of concurrent infection. What caused the other four was not evident. Eosinophilia (over 4%) was present in 11 of the children. Two of these had a history of allergy, and one had proved Ascaris infestation. Of the remaining eight, four had no ova in the stool on examination and the other four had no examination.

Stools and Urine: The parents of 18 children cooperated to the extent of having stool examinations made. Three of the children were found to have intestinal parasites: ascariasis in two and uncinariasis in one. We do not know whether this percentage of infestation (17%) would have prevailed in the 32 who were not examined. The parents of 10 children brought urine imens or collected them in the office. Nine of these cimens were normal. One child had pyuria, which rapidly under treatment.

TREATMENT

Treatment consisted of the following five distinct parts, which were explained in detail to the parents. 1. Immediate weaning of the baby from the bottle or breast. Gradual weaning of a baby toward the end of the first year is desirable, but we were convinced that only abrupt weaning in this group of children would achieve the results we wanted. 2. Getting the child on a well-balanced diet, encouraging him to feed himself as much as possible. We knew that general remarks about essential food elements would accomplish little if anything, so we told the parent to try to get the child to eat the following foods: for breakfast, fruit juice, an egg, and cereal or toast; for dinner, two vegetables, rice, potato or macaroni, and meat or cheese; for supper, a fruit or vegetable, cereal or sandwiches, and a simple dessert. The child was to be offered a glass of milk along with each meal but he was not to drink it all at the first of the meal. Nothing was to be given between meals but fruit or fruit juice. 3. Giving the baby an iron-vitamin mixture regularly. The mixture we used was compounded by us in the office from the following ingredients: thiamine hydrochloride 600 mg., ferrous sulfate (feosol® elixir) 120 cc., a multivitamin preparation (homicebrin®) 120 cc. The prescribed dose was 5 cc. (one teaspoonful) three times a day. The children thus received daily 4,500 I. U. of vitamin A, 40 mg. of thiamine hydrochloride, 1.8 mg. of riboflavin, 90 mg. of ascorbic acid, 1,500 I. U. of vitamin D, and 150 mg. of ferrous sulfate.

It will be noted that the amount of vitamin A, riboflavin, ascorbic acid, and vitamin D is three times the daily vitamin requirement recommended by the Food and Nutrition Board of the National Research Council. The large amount of thiamine hydrochloride appears to be grossly excessive, but clinical experience has proved to us its value in stimulating appetite. We have also seen several cases of beriberi in malnourished children in this section of the country and are convinced that thiamine deficiency is not uncommon. The amount of ferrous sulfate is slightly above the dose usually given. In compounding the preparation we mixed the thiamine hydrochloride with the multivitamin preparation and then added the ferrous sulfate in small amounts, shaking the mixture vigorously all the while. In this way a homogeneous mixture was obtained. When the full amount of ferrous sulfate was poured in at once, a lumpy mixture resulted. 4. Examination of the stool for ova. Intestinal parasites (principally Ascaris and Necator americanus) are not uncommon in this region, and it seemed advisable to rid the children of these if we were to get the best results. 5. Further observation and blood study at the end of three weeks (when the supply of iron-vitamin mixture that we furnished was exhausted).

RESULTS OF TREATMENT

We tried to impress on each mother the necessity for further examination. Knowing that some of these children lived at quite a distance from our office and realizing the human tendency to disregard instructions, we were agreeably surprised to have 32 report back in person. Letters were sent to the others, and three replied. Another physician sent us a report on one child. This gave a total of 36 (72%) on whom we secured sufficient data to determine results.

The best-planned medical regimen is of little avail if, after it is prescribed, it is not applied. So we attempted to determine the amount of cooperation shown by the parents of these 36 children. The parents of 25 (69%) appeared to have tried to follow our instructions completely, and the parents of 10 modified them to greater or lesser degree. In the 25 instances in which treatment as outlined was followed, satisfactory results were obtained. In four of these the improvement was slow owing to intercurrent infections. In 21 the response was immediate. In three weeks the children's color had improved, their appetites had increased, they were less irritable, their bowels were moving more normally, and they slept better. The average gain in hemoglobin in this group was .54 gm. per week. The following case reports illustrate the results obtained when our instructions for treatment were followed.

REPORT OF CASES

CASE 8.—This patient was an 18-month-old white boy whose father was a merchant. He was started on milk from a bottle at 1 month and on supplementary vitamins and solid foods at the usual age. He sat up at 5 months and walked at 13 months. He had the usual immunizations. He appeared to do well up to 1 year of age, and then his appetite diminished. He relied more and more on his milk. At 18 months he was receiving 1 qt. (1,000 cc.) of milk from a bottle each day and little other food. He was brought to the office because of pallor, irritability, and poor sleeping habits.

Physical examination showed him to be slightly overweight, pale, flabby, and unfriendly. He weighed 21 lb. 15 oz. (10 kg.). Blood study showed a hemoglobin value of 9 gm. (59%) with 4,300,000 red blood cells. The treatment outlined was prescribed.

Three weeks later he appeared much happier and more lively. The hemoglobin value had risen to 10.5 gm. (70%). The mother reported that she had no difficulty stopping the bottle, that he was eating and sleeping well and playing with other children. The mother was advised to continue the treatment.

Case 1.—This 15-month-old white boy was the son of a farmer. He was the 10th child in the family; the father was 40, the mother 39. He had been breast-fed all of his life. Vitamin drops were given for three weeks only. Grits were started at 12 months, but no other foods were given. He sat up at 6 months and walked at 12 months. He had been seen by a physician once. He was fed in his mother's lap and slept with his mother.

Physical examination showed him to be thin, small, pale, and poorly nourished. He showed parietal bossing, flaring of ribs, and enlarged epiphyses at the wrists and ankles. His hair was long. He weighed 19 lb. 4 oz. (8.7 kg.). The hemoglobin value was 9.25 gm. (61%), with 2,530,000 red blood cells. The treatment outlined was prescribed.

Three weeks later the hemoglobin value was 10.25 gm. (67%) and the child weighed 20 lb. 6 oz. (9.3 kg.). The mother reported that she had weaned him immediately without any difficulty, that he was eating general foods and drinking some milk from a cup. His disposition had improved considerably. She was advised to continue the treatment.

Case 25.—This 16-month-old white boy had been a former patient of ours and had been brought in for monthly check-ups for the first six months, receiving the usual immunizations. At the age of 10 months he weighed 21 lb. (9.5 kg.) and appeared to be in excellent health. Toward the end of the first year he had learned to hold the bottle for himself and had gradually lost all desire for other foods. He had never learned to feed himself with a spoon. At the age of 14 months he was taken off the bottle and ate well, but he took little milk from a cup, so the bottle was started again. When he was brought in for examination at 16 months his mother stated that he was drinking five bottles of milk, 8 oz. (250 cc.) each, daily. He refused all other foods. His mother brought him in because he was constipated and irritable.

Examination showed him to be pale and quite irritable. The muscles were flabby. He weighed 22 lb. 13 oz. (10.4 kg.). The hemoglobin value was 9.5 gm. (61%). The stool was negative for parasites. The treatment outlined was prescribed.

In three weeks there had been a pronounced change, according to his mother. His appetite was good, he was eating general foods and drinking small amounts of milk from a cup. He had gained 10 oz. (280 gm.) in weight and the hemoglobin value was 10.5 gm. (69%). His mother was advised to continue treatment.

In the 10 instances in which the mother modified our suggested treatment, the results varied from poor to fairly good. The following cases illustrate the results when the prescribed treatment was modified.

Case 17.—A 21-month-old white girl was the daughter of a salesman. She had been bottle-fed since birth with an evaporated milk formula, with one short period of receiving goat's milk. Cod liver oil was given regularly. She was started on other foods in infancy but did not like them or take them well. She had learned to hold a bottle early but had never learned to feed herself with a spoon. Her mother had wanted to stop the bottle, but her grandmother insisted that it be continued. The day before she came to the office she had received the following foods: for breakfast, small amount of cereal and bottle of milk; for dinner, bottle of milk; for supper, bottle of milk, and between meals, box of soda crackers.

Examination showed her to be pale and cross. Her skin was sallow and her muscles flabby. She appeared tired. The hemoglobin value was 9 gm. (59%) and the red blood cell count was 5,790,000. The stool was negative for ova. The treatment outlined was prescribed.

She was brought back in three weeks. The bottle had been taken away from her, but she was still allowed to eat food such as crackers between meals. The medication had been given irregularly. It was evident that more drastic steps were necessary. The child was admitted to the hospital, a blood transfusion was given, and a diet instituted. This time the family agreed to cooperate and the results were gratifying. When seen again in four months the girl was in fine spirits. Her appetite was good, and the hemoglobin value was 12.5 gm. (83%).

Case 19.—This was a 26-month-old white girl, daughter of a sprayer for a county health department, who was brought in because of frequent colds and attacks of diarrhea. She had been bottle-fed with an evaporated milk formula. Solid foods were given at the usual age, but around 1 year of age she lost appetite for everything but milk. She had been given orange juice daily from 1 to 8 months of age, and a percomorph liver oil concentrate from the ages of 3 weeks to 2 years. The diet on the day before examination consisted of these foods: for breakfast, grits, a small amount of egg, and a bottle of milk; for dinner, banana pudding and tea; for supper, grits and gravy and a bottle of milk.

Examination showed a pale, unhappy, and irritable youngster. Her weight was 32.5 lb. (14.8 kg.). Her muscles were flabby. The hemoglobin value was 8.5 gm. (56%). The treatment outlined was prescribed.

Ten days later she was brought back with a severe upper respiratory infection. The mother stated that she had been improving until she caught cold. Aureomycin was prescribed, and the parents were urged to bring her back for further observation. She was brought back in four months. The mother stated that she had improved considerably and then had fallen back into her old habit of eating between meals and had lost her appetite. Her hemoglobin value was 8.5 gm. (56%). She was now in the pretreatment status. Again we outlined the treatment, gave some more of the iron-vitamin mixture, and urged that she be brought back in three weeks. At the time of this writing, six months later, she has not returned.

Case 12.—The patient was a 23-month-old white boy whose father was in the Navy. He was brought in because of sores around the mouth. He had received breast milk up to 6 months, evaporated milk from a bottle up to 13 months, and then cow's milk from a glass. Cereals had been started at 3 months, meat at 7 months, fruit at 9 months, and vegetables at 13 months. No supplementary vitamins had been given. For the past few months his diet had consisted of starches, milk, occasionally meat, and almost no vegetables and fruit. When asked about immunizations, the mother replied, "He has had the three-in-one shots—whooping cough, diphtheria, intestinal."

Examination showed him to be pale, flabby, and irritable, with evidence of rickets. He weighed 26 lb. (11.8 kg.). There were impetiginous lesions around the mouth. The hemoglobin value was 9 gm. (59%), the red blood cell count was 5,100,000. The stool was negative for ova. We prescribed treatment for the impetigo and outlined the usual treatment for anemia and malnutrition.

Five days later the child was brought in again. The impetigo had cleared, but otherwise there was no change in his condition. The medication had been given sporadically, the diet had not been followed. Again we explained the different phases of the treatment to the mother and urged her cooperation. Eight months later we received a letter from a pediatrician in a neighboring city asking for this boy's record. When we wrote that he was one of our case studies and we would like a follow-up on him, this was the reply:

"When I saw this boy he was 31 months of age and the complaint at that time was 'sores on the arms and legs.' His general condition was slightly improved over his condition when first seen by *you*. His weight was 27.5 lb. (12.5 kg.). The stool was negative for ova. The hemoglobin was 72% (Sahli). He was on table foods, orange juice and 'hadacol'—one teaspoonful three times daily. The sores on his arms and legs were infected insect bites. My examination was otherwise negative except for the child being underweight and malnourished. I let her continue on the 'hadacol' but insisted on homicebrin®—one teaspoonful twice a day. I am afraid this mother is a bit too much for me to cope with but I will keep on trying. Thanks for the letter and the patient (not the mother)."

COMMENT

As we compared the general conditions in which these children lived and the care they received in infancy with the situation that prevailed when we [illegible] pediatric practice 23 years ago, we were impressed with the progress that has been made. Sterilized milk, earlier use of scientifically prepared cereals and vegetables, better refrigeration, widespread screening of houses, better heating facilities, water from city mains or deep wells instead of from the dangerous shallow wells—all of these have made their contribution to better health. The need for supplementary vitamins, not so well recognized formerly, is now an accepted fact. Vitamins had been given to 94% of these children, and 70% had received them with fair regularity during their first year. Routine immunizations, infrequently given for diphtheria and not yet developed for pertussis and tetanus in 1928, were received by over half of the children in this series.

From the evidence collected in this study, we are convinced that the babies of today in this section of the country are receiving far better medical and general care during the first months of life than they did a quarter of a century ago. This evidence also shows, however, that many still are not getting the care that is available and to which they are entitled. It became equally apparent as we studied these records that inadequate care is being given to many children during the latter part of the first year and during the second and third years of life, with resulting malnutrition and anemia. It is obvious that the immediate cause of the malnutrition and anemia is inadequate intake of foods taining iron and vitamins. These children subsisted ely on milk. Other foods, mostly carbohydrates, taken in small amounts. The vitamins necessary for ormal growth were not being received. Contributing factors were intestinal parasites, chronic infections, or repeated attacks of acute infections, particularly of the respiratory tract.

The treatment we employed in these cases of malnutrition and anemia gave satisfactory results. However, we were more concerned with the remote causes, the factors in the child's earlier life that had contributed to the development of the present poor health. As we interpreted the information secured from our study, anemia and malnutrition resulted from the following causes. 1. Misunderstanding as to the role of milk in a child's diet. It has been preached from the house tops that milk is the perfect food and that every child needs a quart a day. Milk is undoubtedly the best single food, but it is not a complete food. Many children not only do not need, but cannot take, a quart a day if they are to eat the additional foods required for normal growth and development. When we attempted to explain this to the parents, the usual reply was, "But I always thought that if a child got a quart of milk a day everything would be all right."

2. Failure to wean the baby from the breast or bottle during the last months of the first year. When a baby has learned to hold a bottle for himself, to lay it aside and pick it up at will, to carry it around with him as a toy, he tends to dawdle and to drink a portion of the milk now and a portion later. His natural appetite is dissipated. He satisfies himself with milk from the bottle, refuses other foods, and goes on his anemic way.

3. Failure to teach the child early to feed himself, to hold and drink from a cup, and to handle a spoon. When a baby is taught to drink from a cup and then taught to handle the cup, the transition from bottle to cup is relatively easy. When a sudden change is attempted without early training, difficulties ensue. If, when a baby is old enough to sit in a chair, he is allowed to feed himself, he appears to enjoy it and the eating of solid foods becomes a pleasure. If, on the other hand, a spoonful of food is constantly being thrust into his mouth, his sense of independence and individuality tends to become insulted and he refuses to participate in the one-sided game. Nowhere is it more evident than in feeding an infant that children can be led with ease but pushed with difficulty.

4. Failure to continue the administration of supplementary vitamins after the first few months of life. Although 47 of the 50 babies had been started on supplementary vitamins early, 6 received them less than a month and 9 others did not receive them after the first six months. Few of them were given supplementary vitamins during the second year of life.

5. Poor understanding on the part of the parents as to what constitutes a satisfactory diet. Many of the mothers seemed to believe all that was necessary was to fill the child's stomach; whether it was with milk, grits, or soda crackers did not seem to matter. A majority of the children seemed to be getting a sufficient number of calories, and less than half were underweight. This fact alone kept many of the parents from realizing that the children were also malnourished.

6. Lack of periodic medical examinations. The mothers of 25 children stated that they had carried the child to the physician only when he appeared sick. The other 25 had taken the child for regular examinations for the first 9 to 12 months but not thereafter. Had all of these children been observed by a physician at regular intervals, we are sure that most of the malnutrition and anemia could have been prevented. We are also sure that in all but three cases it was not any financial difficulty that kept these babies from being taken to a physician; it was either ignorance or indifference.

It is apparent that the problem of malnutrition and anemia in children is not merely one of diagnosis and treatment, but that it is also, and perhaps primarily, one of prevention; and prevention comes through education. What education had done and is doing is well demonstrated by the greatly improved care that the infant receives today as compared with the care given a baby two decades ago. This effort must be continued, but it must be amplified to include the older infant and the young child, if we are to prevent the appearance of malnutrition and anemia in a sizeable segment of our small-child population. The pediatrician and the general practitioner must take a leading role in this undertaking.

SUMMARY

A clinical study of malnutrition and anemia in 50 young children has been presented. Effort has been made to determine the immediate and remote causes for this condition, and a method of treatment has been outlined.

117 West Cheves. (Dr. Price).

DIFFERENTIAL DIAGNOSIS OF NECK PAIN

James E. Watson Jr., M.D.
and
Sylvester W. Thorn, M.D., Houston, Texas

In the differential diagnosis of neck pain, consideration may be taken of the patient's age, the manner of onset and the duration of the pain, the severity of the pain, and the general condition of the patient. In children acute neck pain is usually due to an infectious process in the nasopharynx, the central nervous system, or the lymph nodes. In adults neck pain is often due to dental or other oral infections, postural and structural changes in the neck, muscular affections, and injuries. In the elderly neck pain may be due to cervical arthritis, vascular disease, and malignant tumors.

Points to be considered in the history taking include the location of the pain in the neck, radiation of the pain, manner of onset, recent or remote injury that might affect the neck, occupational trauma, recent or present infection, exposure to contagious disease, exposure to inclement weather, constitutional disease, and duration of the complaint and whether it is primary or recurrent.

Important points in the physical examination include age, sex, temperature, pulse rate, respiratory rate, blood pressure, habitus, obvious injury or abnormality, associated disease, and sensory, muscular, or vascular changes. The presence of any mass or swelling should be noted: its size, shape, consistency, tenderness, connection with other neck structures or with the overlying skin, and its mobility during various movements of the neck and on swallowing should be determined.

Laboratory tests that may be required include complete blood cell counts, serum agglutinations, serological tests for syphilis, x-ray examination, and spinal puncture.

INFLAMMATION OF TONSILS, PHARYNX, OR LARYNX

The neck pain of acute inflammation of the tonsils, pharynx, or larynx is usually that of a "sore throat." It may be worse on swallowing or talking and is usually accompanied by fever, malaise, and other symptoms of an acute upper respiratory infection. On examination there may be tenderness in the anterolateral neck under the angle of the jaw; oral inspection will show the congested and enlarged tonsils, often with an exudate on the surface, or, if tonsillectomy has been done, there may be only some reddening of the hyperplastic lymphoid tissue of the posterior pharyngeal wall, with or without a postnasal drip of mucopurulent material. If the tonsil infection spreads to the surrounding tissues, a peritonsillar abscess may occur. In this very painful complication, the congestion, swelling, and redness of the tonsil extend along the anterior pillar toward the uvula, or downward toward the base of the tongue. Although the majority of these acute infections of the upper respiratory tract are caused by a Streptococcus or a virus, an occasional one may be Vincent's angina, diphtheria, or agranulocytic angina. In Vincent's angina there may be involvement of the gums as well as the throat; there is usually evidence of poor oral hygiene; there is a fetor oris; the exudate forms a grayish white membrane in irregular patches, and when it is removed some bleeding occurs; the large, cigar shape bacillus and the fine spirillum of Vincent can be found in large numbers on a smear made from the raw lesion and stained with methylene blue or by Gram's method. In diphtheria there is usually a history of no diphtheria immunization or of only a remote immunization in a child or young adult of known susceptibility, of possible exposure to a case of diphtheria or to a carrier, or of an epidemic in the community. The onset is sudden, with the patient getting progressively sicker; either the nose, pharynx, or larynx may be the site of most of the infection. As the larynx becomes involved there is difficulty in breathing and tracheotomy may be required. The exudate forms a membrane that spreads over the affected area and is rather adherent to the underlying tissue, so that when part of the exudate is removed, some bleeding occurs; the organism can be cultured from this area for identification in several hours, and can often be found on a direct smear made from the raw surface and stained with methylene blue. In the relatively rare agranulocytic angina, there is usually the history of an acute sore throat or upper respiratory infection that has been treated with sulfonamides, improved, then relapsed. Or, other granulocyte depressants may have been taken. The patient gets sicker daily; areas of necrosis appear in the mouth and throat, as well as elsewhere, owing to the lack of leukocytic response to infection, and the tonsils may slough out. The history, the findings on examination, and the complete blood cell count showing the marked granulocytic leukopenia point to the diagnosis.

The uncommon retropharyngeal abscess may occur in association with an acute infection of the throat, or following an injury to the throat, as by a fish bone. The symptoms are somewhat similar to those of a peritonsillar abscess, but on examination the swelling of the posterior wall of the pharynx will be seen and can be palpated. There should be no pulsation, as in an aneurysm; the swelling should not be firm and hard, as in malformation of the vertebrae. A lateral roentgenogram of the neck usually shows the posterior wall of the pharynx displaced forward. Most of the reported cases have been in children, and on an infectious basis.

INFECTIONS OF LYMPH NODES AND GLANDS

Acute cervical adenitis may be the cause of unilateral or bilateral neck pain. The lymph node infection may be secondary to infection in the region of the neck drained by the affected nodes, or may be part of a generalized lymphadenitis, such as infectious mononucleos he posterior auricular and posterior cervical usually enlarged and painful in Germa chickenpox, in scalp infections and infestations, and in infections of the external ear. The nodes in the lateral and anterior neck may be involved in infections of the naso-oro-pharynx, the mouth, teeth, gums, tongue, lips, salivary glands, and face. The nodes may be small or large, single or multiple, discrete or confluent and matted together. There is usually pain and soreness in the involved area of the neck and the glands are tender to palpation. It is quite important not to mistake the lateral cornua of the hyoid bone for enlarged nodes; each end of that bone is more or less sensitive to palpation, and possibly more so during an acute sore throat, when any movement of the intrinsic structure of the affected area may be painful.

In mumps, or epidemic parotitis, the painful swelling of the parotid gland often begins just under the lobe of the ear, causing some outward protrusion of that portion of the ear. The amount of pain varies from mild to severe, the condition usually being more painful in adults than in children. The swelling may extend in a few hours to involve the entire gland; it may start unilaterally or bilaterally; it may start unilaterally and become bilateral in a few days or a week; or, it may remain unilateral during the present attack. The opening of the parotid duct at the level of the upper second molar tooth is usually reddened and pouting; salivary stimulants usually cause an increase in the pain; and in some cases, opening of the mouth is quite painful. Pancreas or gonad involvement ay occur as a complication of the disease. Rarely, there y be a mumps of the submaxillary or sublingual sali- y glands. In such a case, the pain and tenderness are the anterior neck, corresponding to the swelling of the affected gland.

Acute suppurative parotitis may at times cause pain in the upper part of the neck, but the main involvement and complaint is with the major portion of the parotid gland which lies over the preauricular area of the face. The condition may occur in elderly or debilitated patients with poor oral hygiene who are dehydrated following major surgery or illness. The onset is a rather sudden swelling of one or both parotids that is increasingly painful. Septic symptoms are aggravated. Unless promptly and properly treated, the condition may be rapidly fatal.

A painful postprandial swelling of the submaxillary gland may be a cause of pain in the upper anterior neck. The pain and swelling may occur at the sight, smell, or thought of food, or during a meal; it usually disappears after a meal is finished, but it may be so severe that the meal cannot be finished. The cause is an obstruction of Wharton's duct, usually by a salivary calculus, or by a fibrinous plug. During an attack the swelling may be noted. A stone, or stones, near the opening of the duct may be palpable, but if the swelling is in the substance of the gland, roentgenologic examination will be required.

MENINGITIS, MENINGISM, AND POLIOMYELITIS

The neck pain of acute meningitis is usually in the back of the neck and is increased by an attempt at flexion of the cervical spine. There are usually an associated headache, fever, general symptoms of an acute respiratory infection, possibly nausea with or without vomiting, and lassitude or irritability, and there may be a petechial rash on the trunk or elsewhere. On spinal puncture the fluid pressure will be increased, the fluid will be cloudy or turbid owing to a marked increase in the cell count, and the causative organism may be found on smear or by culture.

Meningism may cause neck pain early in the course of some infectious diseases such as pneumonia, scarlet fever, tetanus, typhoid fever, and in pyelitis of infants. In addition to the neck pain, usually posterior, there may be headache, nuchal rigidity, positive Kernig's sign, and muscular twitchings or convulsions. Although the signs and symptoms of the primary disease are usually definite and distinct enough to indicate the proper diagnosis, on occasion it may be necessary to perform spinal puncture to rule out a meningitis; there are no changes in the spinal fluid in meningism other than some increase in amount and in pressure.

The neck pain of acute anterior poliomyelitis is also usually in the back of the neck. It may be accompanied by headache, malaise, other symptoms of an acute upper respiratory infection, fever, pain in the legs, and, at times, fibrillary twitchings of the leg muscles usually followed by more or less paralysis. The neck pain is increased by attempt at flexion of the spine. Spinal puncture usually shows increased fluid pressure; the fluid may be clear or turbid, and there is an increase in the number of cells, mostly lymphocytes and a lower total cell count than in meningitis, with no bacteria found by smear or culture.

FURUNCLES, CARBUNCLES, AND CYSTS

Furuncles and carbuncles anywhere on the neck are a common cause of neck pain. They are commoner on the back of the neck, particularly in middle-aged men of a stocky build who have a short neck, and especially in diabetics. Due to the density of the tissues of the back of the neck, the pain of a furuncle or carbuncle tends to limit the movements of the neck, and the tenderness seems to extend beyond the edge of the apparent infection. A furuncle, being smaller than a carbuncle, usually localizes and points rapidly, while a carbuncle spreads peripherally in the skin and subcutaneous tissue, and may point in several places, with the patient becoming sicker daily.

Cervical lymph nodes enlarged from Hodgkin's disease, leukemia, lymphoblastoma, tuberculosis, and metastatic carcinoma are usually not painful or tender unless secondary infection, abscess formation, or ulceration occur.

An infected thyroglossal cyst may cause pain in the anterior neck. This congenital abnormality may first cause symptoms in childhood or in early adult life. It is a cystic tumor located in the anterior midline of the neck above the thyroid gland. It moves on swallowing as it is connected with the thyroid gland; it moves on protrusion of the tongue as it is attached to the base of the tongue. An opening through the skin may discharge a glairy mucus or a purulent material. To delineate the course of the sinus, a radiopaque oil may be injected into the tract, the opening closed with a purse-string suture, and roentgenograms taken. The tract usually goes through or behind the hyoid bone.

A lateral cervical cyst may also become infected, then painful and tender. This congenital anomaly may present as a lateral cervical swelling, or as a fistula with a continuous or intermittent discharge of secretion. It is usually first noticed in childhood, but symptoms may not occur until adult life. The upper end of the tract may extend to the tonsil fossa, while the lower end may be anywhere from the hyoid bone to the clavicle.

Sebaceous cysts often occur in the posterior or lateral neck. When they become infected, there is usually sudden enlargement, pain, and tenderness. A residual nodule, usually not tender, may follow spontaneous regression or perforation.

THYROID CONDITIONS

Acute thyroiditis causes moderate to severe pain in the thyroid region of the neck. It may be primary, may occur during the course of an acute infectious disease, or may be secondary to a contigious infection. The gland usually enlarges rather rapidly, is painful and tender, brawny and hard. The overlying skin may become reddened and indurated. Pressure symptoms often occur, and there is fever and leucocytosis, but abscess formation is not common.

Chronic thyroiditis is not common. In this condition there may be bouts of tenderness and slight pain in a progressively enlarging gland.

A diffuse nontoxic goiter is usually not painful or tender. A diffuse toxic goiter is usually not painful or tender, although it may cause a sense of fullness or tightness in the neck. A nodular nontoxic goiter may cause irregular pains in the neck from pressure on the trachea and the recurrent laryngeal nerve, or if it becomes wedged in the thoracic inlet. A toxic nodular goiter may cause similar symptoms in addition to those of the thyrotoxicosis. Hemorrhage into any nodular goiter may cause pain and sudden pressure symptoms; in arteriosclerosis there may be hemorrhage into an essentially normal thyroid gland; a blow or fall striking the anterior neck may result in hemorrhage into the gland with sudden enlargement, usually limited by the capsule, and accompanied with acute pressure symptoms and pain, with discoloration of the overlying skin.

ERYSIPELAS

Erysipelas occurring in the neck primarily or as an extension from the face may be a cause of neck pain. It may originate in a wound, but at times the source of the infection cannot be found. This red, well-defined, acute lesion is accompanied with fever and sepsis; the spread is irregularly peripheral, but the border can be both seen and felt. The skin is hot and thickened, the surface somewhat raised and irregular, and there may be tiny vesicles at the edges. It is always tender and usually painful. The condition may be more or less self-limited, or, in an undernourished, or alcoholic patient, it may be phlegmonous with severe toxic symptoms and extensive necrosis with sloughing of the skin and subcutaneous tissues.

LUDWIG'S ANGINA AND OSTEOMYELITIS

Ludwig's angina begins as a painful induration of the submaxillary area accompanied by chills, fever, and septic symptoms. The mass may be outlined by one finger in the mouth and the thumb or other hand used externally. It is secondary to oral infection and may extend downward into the anterior triangle of the lateral space of the neck. The overlying skin may become red and abscess formation may occur.

Osteomyelitis of the lower jaw may result in an acute or subacute inflammation of the surrounding soft tissues, the mass from which extends upward over the mandible as well as downward, and its connection with that bone is noticed. There has usually been a previous infection about a tooth in the area, or a necrosis following irradiation some weeks or months before. Abscess formation in this soft tissue infection is common. The pain is moderate to severe, and the patient is quite ill, but less so than the patient with Ludwig's angina, from which disease osteomyelitis of the lower jaw must be differentiated.

NUCLEUS PULPOSUS DISLOCATION

Posterior dislocation of the nucleus pulposus in the cervical spine may cause neck pain. The spinal cord, a cervical nerve root, or both, may be compressed in varying degrees, i. e., a midline dislocation may compress the cord, a paramedian dislocation may compress the cord and a nerve root, while lateral dislocations will involve only a nerve root. The cord compression syndrome is similar to that from a tumor of the spinal cord or the nerve root, and the differentiation is difficult. There may be stiffness and pain in the neck with radiation into one or both shoulder girdle areas, arms, forearms, or hands, as well as sensory disturbances and motor weakness in one or both upper extremities, depending on the segmental involvement. There may also be varying degrees of sensory alteration and motor weakness in the trunk and lower extremities. Approximate localization of the lesion from the clinical standpoint is usually not difficult, while the exact level may be confirmed by myelography. Unilateral dislocation involving a single nerve root is the commonest, and ordinarily occurs at the sixth intervertebral disk involving the seventh cervical nerve root, or at the fifth disk involving the sixth nerve root. The first symptom may be pain, often limited to the lower neck. Recurring attacks of regional pain associated with some neck stiffness are followed by attacks of severe radiating pain spreading to the scapula, tip of the shoulder, the arm, and the upper chest. At times it may radiate along the medial aspect of the forearm and hand. The pain may be aggravated by movements of the neck, and by coughing, straining, or sneezing. There may be attacks of numbness and tingling of the forearm and hand. There may be some temporary relief by elevating the arm above the head. Examination shows the head and neck are held in a rather fixed position and movements of the spine are done in a guarded manner. There may be spasm of the cervical and shoulder girdle muscles, as well as muscle atrophy and fibrillations. The determination of areas of altered sensation and muscle weakness is of localizing value. On pressure applied to the top of the head with flexion to the side of the lesion the symptoms may be brought on or aggravated. Head traction usually gives relief. For the roentgen examination, anteroposterior, lateral and obl[illegible] films are needed. Of particular s[illegible] are [illegible] cervical lordosis, and the n[illegible] and inter[illegible] vertebral forame[illegible] in full flexion and compared with one taken in extension may show marked restriction of movement in the lower cervical spine.

COMPRESSION SYNDROMES

Cervical ribs may or may not cause neck pain. The symptoms may be nervous, muscular, vascular, or a combination of these. Nervous symptoms of pain, hyperesthesia, hypoesthesia, or paresthesia may occur in the neck, arm, hand, shoulder, or upper chest, either front, back, or side. There may occur weakness of one or more muscles of the arm or hand. Vascular symptoms include coolness, color changes, trophic changes, and increased perspiration of the involved upper extremity. Adequate roentgenograms of the cervicothoracic spine will show the rib abnormality, while physical and neurological examination, together with special tests to detect compression of the brachial plexus or subclavian artery, will differentiate the cervical rib syndrome from similar conditions.

The scalenus anticus syndrome may cause neck pain and other symptoms quite similar to those of the cervical rib syndrome. The scalenus anticus muscle may be tender, and the symptoms may be temporarily alleviated by diagnostic anesthetization, i. e., by injection of 3 cc. of 1% procaine into the muscle. By the Adson maneuver, the subclavian artery and portions of the brachial plexus may be compressed so that the symptoms due to the scalenus anticus syndrome may be aggravated, or brought on during an asymptomatic stage. In this test, the patient sits or stands with the two hands in corresponding positions of rest; he then turns the head to one side, elevates the chin, and takes and holds a full inspiration while the examiner feels the radial pulse on each side. In the positive test there will be a marked diminution or complete obliteration of the radial pulse, and/or increase in pain or paresthesia of the arm when the test is performed with the head turned to the affected side.

The costoclavicular syndrome may also cause neck pain and other symptoms due to compression of the subclavian vessels in the space between the first rib and the clavicle. X-ray examination may indicate smaller than normal space between the rib and clavicle on the affected side. In this syndrome, compression of the subclavian vessels is lateral to the point of compression that occurs in the scalenus anticus syndrome and can be demonstrated by two maneuvers. In the first maneuver, the patient assumes an exaggerated military position of attention and takes and holds a deep breath, with the result that the radial pulse is obliterated on the affected side, and a bruit can be heard just under the clavicle where the subclavian artery is being compressed. In the second maneuver, the same results occur when the arm on the affected side is raised high overhead. In these maneuvers, the already small space between the first rib and the clavicle is further narrowed, and the subclavian vessels compressed, partially or completely.

In the scapulocostal syndrome of adults with round shoulders and a drooping shoulder girdle there may be pain in the back of the neck, but the main complaint usually is of deep shoulder pain, and a definite trigger point may be found beneath the upper medial angle of the scapula.

CERVICAL SPINE ARTHRITIS AND INJURIES

Arthritis of the cervical spine is a common cause of neck pain in adults and in the elderly. The onset is usually gradual with pain of a radicular pattern. Examination will show that the movements of flexion, side-bending, and rotation are restricted, and tenderness with little muscle spasm may be noted over one or more of the spinous processes. There may be evidence of arthritis elsewhere, particularly in other parts of the spinal column. Careful x-ray examination of the cervical spine will usually show the arthritic changes, often more marked than the symptoms would indicate, so the clinical differentiation must be made from other possible cause of neck pain in the patient under consideration.

Cervical spine injuries of greater or less degree, recent or remote, may be the cause of neck pain. In open wounds and other severe injuries, the appropriate physical, neurological, and roentgenological examinations are indicated by the injury. In remote injuries, or in minor injuries without involvement of the spinal cord, a careful history should be taken in order to determine the probable force acting at the time of injury. The recoil mechanism in effect at the time of the cervical spine injury may minimize the apparent extent of the injury, so thorough roentgenological examination is needed. Films taken through the open mouth, or with the moving jaw technique are usually required for good views of the odontoid process and of the atlantoaxial articulation. In fractures or dislocations, even without cord symptoms, the patient usually holds the head in an abnormal position, and tenderness may be found on one or both sides of the neck at the level of the injury.

CAUSES OF SUDDEN PAIN

The pain of a "crick in the neck," acute torticollis, acute cervical myositis, or acute cervical myalgia, is usually of sudden onset on awakening after sleep, or follows exposure to inclement weather, is usually accompanied with some of the symptoms of an acute upper respiratory infection, affects the posterior neck muscles, and is aggravated by jarring or sudden movement of the neck. The patient holds the neck rigid in the position of least pain, and the affected muscles may be tender and taut.

A rather acute neck pain, usually unilateral, may often be associated with, or as the presenting symptom of, a virus infection of the respiratory tract. There may be slight fever and a normal or depressed leukocyte count. Other symptoms may occur, so that a diagnosis of influenza, virus pneumonia, or of other disease, may be made.

Subclavian aneurysm may cause pain in the lower neck as the severe boring pain due to compression erosion of the clavicle. The pain may begin rather suddenly, or increase in severity suddenly, even though the aneurysm is hardly noticeable. A history of syphilis, or of a stab or gunshot wound in the area, and careful examination will usually point toward the diagnosis.

LESS COMMON CONDITIONS

The pulmonary sulcus tumor of Pancoast, an anatomical rather than a histological entity, may invade the brachial plexus causing neck pain, and pain in the distribution of the affected nerves. It may also cause Horner's syndrome, and it may cause symptoms suggestive of an esophageal diverticulum. The tumor arises in the apex of the lung and its symptoms are usually due to its local and expansile growth, rather than to metastases. However, any tumor arising in, spreading to, or metastasizing to the region could cause the symptoms.

Pain in the side of the neck following acute mastoiditis may be due to a Bezold's abscess. The pus from the perforation of the tip of the mastoid process extravasates within the sheath of the sternomastoid muscle, breaks through near the middle, and forms a definite, painful abscess between that muscle and the submaxillary area. This is accompanied by exacerbation of the illness, tenderness and swelling in the area, and perhaps by redness of the overlying skin.

Pain in the side of the neck may be caused by an infected esophageal diverticulum that is sore and tender. If it is large, there may be dysphagia, or other pressure symptoms. The diverticulum usually presents itself as a mass that appears in middle or late life, usually on the left side of the neck, usually lateral and posterior to the thyroid cartilage or just below this area, and it varies in size from time to time, i. e., it increases in size with eating, and may completely disappear when no food is taken for several hours. It may rarely be seen, may be palpated when distended, and has little if any mobility and a doughy consistency. The opening may be seen on esophagoscopy, and roentgenologic study of the esophagus with opaque material will verify the diagnosis.

CONDITIONS IN THE LARYNX

Tumors of the larynx usually cause hoarseness as the first symptom, but a sense of throat discomfort or actual pain may also occur. Papillomas of the larynx usually occur in children, oftener in boys, and have a tendency to recur and to be transplanted to adjacent parts; these tendencies are less common in adults. Carcinoma of the larynx usually occurs between the ages of 40 and 60, and is several times commoner in men than in women. While the first symptom may be hoarseness, by the time a physician is consulted there is often discomfort or pain in the larynx. At this time, or later, there may be aphonia, dysphagia, dyspnea, and other symptoms. By indirect or direct laryngoscopy with biopsy of the lesion, the tumors can be differentiated and the diagnosis made.

Tuberculosis of the larynx may cause a sense of slight pressure or irritation of the throat, or a feeling of dryness and burning. Roughness of the voice, or frequent clearing of the throat may occur. The voice may tire easily, and evening hoarseness occur. Pain on swallowing develops if the epiglottis, arytenoid cartilages, or aryepiglottic folds are involved, as the laryngeal involvement is usually secondary to the pulmonary, and there is more or less cough. By laryngoscopy the lesions may be seen, particularly when the direct method, which lifts the epiglottis, is used. In the early stage of infiltration there may be relatively nonspecific changes, as slight congestion or reddening of the posterior wall of the larynx, or an "ashen gray" anemia of the mucosa at times. Later there may be seen laryngeal congestion with or without yellow nodules or tubercles in the submucosa with intact epithelium of the mucous membrane. There may be irregular thickening of the mucous membrane of the posterior wall of the larynx, or the vocal cords may be involved early, as shown by a rounding in the posterior third, giving the cord a spindle shape. Later there may be confluence of the tubercles, then necrosis of the overlying epithelium, with production of an ulcer. The ulcers may be of any size, single or multiple, discrete or confluent, and on one or both sides. The tuberculous ulcer spreads slower than the syphilitic ulcer, but faster than the carcinomatous ulcer. The tuberculous ulcer is rather superficial and is covered with a grayish exudate; the syphilitic ulcer has a punched-out appearance and is covered with a yellowish exudate; while the carcinomatous ulcer is raised due to deeper infiltration and is usually confined to the vocal cord or ventricular band on one side. Tuberculous perichondritis of the epiglottis and arytenoid cartilages may occur from a deep ulcer of the mucous membrane. A tuberculoma may occur as a pedunculated fibrotuberculoma or a granulotuberculoma may occur on the back wall of the larynx or on the vocal folds. Later, when the tubercles are large enough or numerous enough to interfere with the circulation of the larynx, edema results It usually occurs in the epiglottis, the aryepiglottic folds, and the vocal folds. In practically all cases of tuberculosis of the larynx, tubercle bacilli may be found in the sputum and there is a productive and exudative cavernous tuberculosis of the lungs.

List of Causes of Neck Pain

Disease	In Whom Found		
	Child	Adult	Elderly
"Sore throat," and similar conditions	+	+	+
Acute cervical adenitis	+	+	+
Mumps	+	+	0
Acute suppurative parotitis	0	+	+
Salivary duct obstruction	0	+	+
Meningitis	+	+	0
Meningism	+	+	0
Acute anterior poliomyelitis	+	+	0
Furuncle	+	+	+
Carbuncle	0	+	+
Thyroglossal cyst	+	+	0
Lateral cervical cyst	+	+	0
Acute thyroiditis	+	+	0
Goiter	0	+	0
Thyroid gland hemorrhage	0	+	+
Erysipelas	0	+	+
Ludwig's angina	0	+	+
Osteomyelitis of jaw	0	+	+
Cervical spine injury	+	+	+
Cervical disk syndrome	0	+	0
Cervical rib	0	+	0
Scalenus anticus syndrome	0	+	0
Costoclavicular syndrome	0	+	0
Scapuloc[illegible]	0	+	0
Cervical [illegible]	0	+	+
"Crick in [illegible]	+	+	0
Virus respiratory infection	0	+	+
Subclavian aneurysm	0	+	+
Pancost's tumor	0	+	0
Bezold's abscess	+	0	0
Esophageal diverticulum	0	+	+
Laryngeal tumor	+	+	+
Laryngeal tuberculosis	0	+	0
Esophageal tumor	0	+	+
Syphilis of pharynx and larynx	0	+	+
Foreign body in larynx	+	+	+
Subdeltoid bursitis	0	+	0
Herpes zoster	0	+	+
Epidural abscess	+	+	+
Primary tumor of cervical spine, nerve, or cord	0	+	0
Metastatic tumor of cervical spine	0	+	+
Carotid hypersensitivity, or tumor	0	+	0
Cardiac disease	0	+	+

In the secondary stage of syphilis there may be a slight sore throat; redness and congestion, or mucous patches may be found in the oropharynx, and there may be a relatively painless cervical and/or generalized lymphadenopathy, and a positive serological test for [illegible] In the tertiary stage, the gumma may break an ulcer, e. g., in the larynx, on the anterior portion. There is mild to moderate pain that is increased on swallowing. The ulcer has a deep, punched-out appearance, some induration occasionally, little if any edema, a yellowish exudate on the base of the ulcer, and at times perichondritis and chondritis at the bottom of the ulcer.

Foreign bodies in the larynx usually cause a sudden attack of coughing, and choking and a feeling of discomfort or pain in the larynx. If the foreign body remains in the larynx, voice changes, wheezing, and possibly cough, will be noted on examination. If the object is large, dyspnea, and even asphyxiation may occur. If the material is radiopaque, it may be found on x-ray examination. *A history of definite or of possible aspiration of a foreign body is usually available.*

BURSITIS AND HERPES ZOSTER

In an acute subdeltoid bursitis there may be pain radiating into the neck from the shoulder region. The pain is aggravated by attempts to abduct or rotate the arm, and often radiates down the arm. It is fairly common in adults. *Usually there is no history of injury, but there may have been some overexertion.* Tenderness is fairly well localized at the region of the subdeltoid bursa, and there may be a visible swelling at that point. The x-ray examination may or may not show calcium deposits in the subdeltoid bursa, or in the supraspinatus tendon *in recurrences* of the condition.

Herpes zoster of the neck begins as a pain of a neuralgic nature, at times during or soon after an acute infectious disease, followed by the appearance of crops of vesicular skin lesions over the course of one or more of the major nerves. The individual skin lesion is a clear vesicle with surrounding hyperemic zone. If the vesicle is ruptured, secondary infection may occur with the formation of ulcers, either discrete or confluent. In youth, herpes zoster is a relatively minor disease, while in adults and the elderly it is more painful, and residual pain after disappearance of the skin lesions may be a protracted complaint.

ABSCESSES AND TUMORS OF THE CERVICAL SPINE

An epidural abscess of the cervical spine may cause posterior neck pain that is exaggerated by coughing, sneezing, straining, or movement of the spinal column. The signs and symptoms of systemic infection are present; the abscess may be part of a septicemia, usually staphylococcic, or it may be the only metastatic process from a primary lesion situated elsewhere, e. g., furuncle, cellulitis, osteomyelitis, and others. Spasm of the posterior neck muscles may be present, and there is marked tenderness over the spinal column in the region of the abscess. Radicular pains from the abscess area are common. Hyperesthesia, paresthesia, and numbness may be present in the zone of the involved nerve roots. The resulting compression type of myelitis produces rapidly progressive signs of a transverse lesion situated below the level of the abscess. Partial or complete spinal canal block may be demonstrated by lumbar puncture before definite signs of compression occur. However, the performance of lumbar puncture and the removal of even a small quantity of fluid might produce an immediate paraplegia. *An early diagnosis is so important that this risk may be well justified.*

Primary and metastatic tumors of the cervical spine, of the cervical cord, and of the cervical nerves, usually cause pain in the distribution of the affected nerve. Although neither is common, the primary is more likely to occur in adults, while the metastatic affects the elderly, as a rule. *Particularly in the case of primary tumors is it important to make a tentative and localizing diagnosis as early as possible,* for, not only may the tumor be benign, but also an early benign tumor may often be removed with such conservative surgery that little disability remains. The neck pain of these primary and metastatic tumors is usually of gradual onset, intermittent, worse at night, progressive in severity and extent, usually follows the distribution of the affected nerve, and is accompanied after a variable length of time with sensory and muscular symptoms in the arm of the same side. Primary tumors of the cervical spine usually involve the nerves rather than the cord, and primary tumors of the cervical nerves are usually extramedullary, so these classes of tumors do not cause spinal fluid changes. On the other hand, primary cord tumors, extramedullary intradural tumors, and metastatic tumors to the spine usually do cause definite changes in the spinal fluid, both clinically and physically. In all cases roentgen examination of the cervical spine is needed; spinal puncture is usually required; myelography may be needed; and in some cases not until laminectomy can the proper diagnosis be made.

MISCELLANEOUS CAUSES

On occasion, neck pain associated with attacks of dizziness and mild syncope, especially on turning the head to the side, may be found due to a tightly fitting collar in a man having a sensitive carotid sinus or a carotid tumor. In some instances the collar may be worn so tightly that the venous return through the superficial neck veins; as the external jugular, is interfered with, and the congested, suffused appearance of the patient's upper neck and face *is relieved almost at once when the collar is loosened.*

Pain in the neck, more particularly in the root of the neck on the left side, may occur in angina pectoris, acute myocardial infarction, and in cardiac decompensation. In such cases the neck pain is usually referred from the cardiac region, and the other symptoms and signs of the disease present overshadow the relatively minor neck complaint.

Various diaphragmatic and abdominal diseases may at times have pain referred to the root of the neck as one complaint elicited in the history. Such conditions as diaphragmatic pleurisy, subphrenic abscess, liver abscess, acute perforated gastric or duodenal ulcer, acute pancreatitis, acute cholecystitis, ruptured ectopic pregnancy, and others occasionally cause such pain, but the other more characteristic symptoms and signs of the disease indicate at once that the source of the complaint is not in the neck.

CONCLUSION

In conclusion, it may be said that while in many cases the cause of neck pain will be obvious on short examination, in others a most meticulous history, careful physical and neurological examination, and certain laboratory tests will be required before even the most astute clinician can arrive at the proper diagnosis. A list of common causes of neck pain is given.

4107 Fannin St. (Dr. Watson).

CLASSIFICATION AND MANAGEMENT OF REACTIONS TO LOCAL ANESTHETIC AGENTS

Max S. Sadove, M.D., Gordon M. Wyant, M.D., Lloyd A. Gittelson, M.D.
and
Henry E. Kretchmer, M.D., Chicago

Reactions to local anesthetic agents are far commoner than is frequently assumed. In the majority of cases, however, they are of such a mild and transient nature that they require no treatment and tend to escape attention altogether. Such reactions may manifest themselves merely in some degree of excitement or talkativeness and thus may be attributed by the unwary to "hysteria"; in reality they are signs of cortical stimulation, which in their ultimate degree would have manifested themselves as convulsions had the reactions been of a severer type. It therefore behooves the administrator to bear in mind constantly that all local anesthetic agents, be they topical or administered by infiltration, have certain toxic potentials. It is imperative that the possible reactions should be known and correctly interpreted in order that rational treatment may be instituted at once.

It is the object of this paper to promote a clearer understanding of the pathological processes that underlie these toxic reactions and to suggest a classification on that basis, thus facilitating the institution of a rational line of therapy when reactions are encountered.

FACTORS INFLUENCING THE TOXICITY OF LOCAL ANESTHETIC DRUGS

There is a great variation of toxicity from one drug to another. If, for purposes of comparison, we assign to procaine the arbitrary toxicity standard 1, that for piperocaine (metycaine®) hydrochloride would be 3; for cocaine 4; tetracaine (pontocaine®) hydrochloride, 12 to 20; and dibucaine (nupercaine®) hydrochloride, 20. These figures are derived from animal experiments, and thus may not be strictly applicable to man. In clinical practice, in any case, these relative toxicity values do not pertain, because the more potent drugs are effective in greater dilution as are, for instance, tetracaine and dibucaine.

The toxicity for any given drug depends on many factors, which we shall now consider in some detail as they are of the greatest practical importance.

Susceptibility of the Patient.—Patients differ in their susceptibility to local anesthetic drugs, as indeed they do for all therapeutic agents. The words "hypersensitivity," "idiosyncrasy," and "allergy" are generally applied loosely. They are not nearly so common as one is made to believe. Only after errors of judgment in quantity and concentration of the drug and technical faults of administration have been ruled out is it permissible to postulate any one of these states.

A careful anesthetic history must be taken in all cases; and if the patient has had previous local anesthesia, his reaction to these should be thoroughly investigated. If, from this history, true hypersensitivity is suspected, it may be advisable to employ a local anesthetic drug belonging to a different chemical group, if the originally used drug is known. Or better still, unless the indications for local anesthesia are strong, some form of general anesthesia should be employed. In any case it must be emphasized that the patient who has manifested signs of reactions to local anesthesia must be informed of the fact, and should be told what drug has been employed so that he may pass on this information to any physician who might undertake another injection of a local anesthetic drug at a later date.

The problems of psychomotor reactions and of reactions to vasoconstrictor drugs, which also may be expressions of individual susceptibility, will be discussed later.

Total Weight of Drug Injected.—For the average healthy individual there is an average dose by weight for each drug. This dose should be adjusted to the patient's physical status, age, state of nutrition, and other factors affecting his metabolic state. Any excess must be considered an overdose and likely to be followed by untoward reactions. Albert has shown the effectiveness of much smaller doses than are commonly employed, provided a technique is used which is correct in all details.

Concentration of Solutions.—It has been said that the toxicity of a local anesthetic drug increases in geometrical, not arithmetical, progression with increase in concentration. Thus while a given amount of a 1% solution would be four times as toxic as the same quantity of a 0.5% solution, a 2% solution would be approximately 16 times as toxic as an equal amount of a 0.5% solution. The great importance of employing the weakest concentration that will give adequate analgesia would thus become apparent. However, these ratios, in our opinion, are probably indicative only of the general trend of toxicity, and their exactness must await further corroboration. As a guide one may say that the concentrated solutions are needed only for the blocking of large nerve trunks and plexus blocks, and the more dilute solutions for skin infiltrations. It is also advantageous to bear in mind that sensory nerves, being of smaller caliber than motor fibers, can be anesthetized with weaker solutions and that onset of anesthesia is more rapid than motor paralysis. Gasser and Erlanger state that sensory fibers require only one-tenth the strength of local anesthetics as compared with motor fibers. This fact may be made use of where anesthesia but not motor paralysis is required. In tendon repair, for instance, identification

---

This article has been shortened for publication owing to lack of space by omission of the bibliographic references. These will appear in the author's reprints.

From the Division of Anesthesia, Department of Surgery, University of Illinois College of Medicine, Chicago, and the Anesthesia Section, Surgical Service, Veterans Administration Hospital, Hines, Ill.

Reviewed in the Veterans Administration and published with proval of the Chief Medical Director. The statements and published by the authors are the result of their own stud necessarily reflect the opinion or policy of the Veterans A

of a retracted proximal fragment may be facilitated greatly by this technique, which has the added advantage of the use of a solution of distinctly lower toxic potentiality. Nevertheless, whatever the concentration, the safe total dose for the particular drug used should not be exceeded.

Characteristics of the Area to Be Injected.—The vascularity of the part into which injection is made is a major factor in influencing the toxic effect of the solution used, as it significantly affects the rate of absorption and thus the concentration in the blood at any given time. It is this blood level of the drug that presumably is the important factor in the causation of toxic reactions. Slow absorption means a low blood concentration; rapid absorption, a high one, which may attain toxic levels. The persistence of this high level, however, will depend on the rate of breakdown of the agent.

This concept of the rapid establishment of a high blood level of the drug due to absorption from a highly vascular area explains the high incidence of untoward reactions following the topical application of moderately concentrated solutions of tetracaine to the mucous membranes of the mouth, nose and throat—all areas of great vascularity. Moreover, some of the solution is often inhaled into the bronchial tree or ingested; and absorption from the respiratory and intestinal tracts is very rapid indeed, owing to the large capillary plexi in these areas. he patient should always be instructed to spit out any cess of solution and not to swallow it.

Because of increased vascularity, injection into inflamed areas should be avoided, apart from the fact that such injections are painful, that anesthesia is often incomplete, and that the injection may contribute to the dissemination of the septic process.

The addition of vasoconstrictors to the anesthetic solution will diminish the rate of absorption. They will therefore help to prevent the establishment of a toxic blood concentration; but by themselves they carry a certain possibility of reactions, as will be shown later.

Direct intravascular injection must be guarded against by the scrupulous performance of the aspiration test several times during the injection. It must be remembered, however, that blood may not always be obtained on aspiration when a small needle is being used, even if the needle has entered a blood vessel. Careful aspiration also must be performed when injection is made near or at the spinal column, as in paravertebral and caudal blocks. Dural prolongations of variable length accompany the nerve roots at their emergence from the spinal canal, or the dura mater may be prolonged below the second sacral segment. Inadvertent subdural injection would lead to the establishment of a massive spinal anesthesia with the most serious consequences. Furthermore, a large plexus of veins is found in the vicinity of the dura, and absorption from this highly vascular area may be rapid even if intravascular injection is avoided.

Pleural puncture or injection into a viscus must be equally guarded against and the possibility must be kept in mind. Chivers estimates the incidence of pneumothorax following intercostal nerve block at 19%, and not infrequently the same complication accompanies bra- lexus anesthesia and block of the stellate ganglion.

Rate of Injection.—As we have seen, toxicity is directly proportional to the rate of absorption and of destruction through the establishment of a high blood level of the drug. Rapid injection causes increased absorption of the drug irrespective of the vascularity of the area and thus increases the toxicity of the local anesthetic agent. Also, should an inadvertent vascular puncture be made, the possibility of a larger amount of solution entering the blood stream will be enhanced by rapid injection.

It should not be overlooked that a fast injection adds materially to the patient's discomfort, as it causes a sensation of pressure at the site of injection.

The Patient's General Condition.—In the aged, debilitated, or shock patient, or in others with low metabolic rate or decreased body mass, the dose of the drug must be reduced. This can be achieved best by employing a less concentrated solution. Richards has shown in animal experiments that starvation and ascorbic acid (vitamin C) deficiency increase the animal's susceptibility to procaine convulsions. He therefore recommends the administration of ascorbic acid and dextrose preoperatively in cases of debilitated and poor risk patients.

Other Factors Influencing Toxicity.—Some drugs, such as cocaine, because of their toxicity, are unsuitable for infiltration purposes. Richards and co-workers have shown that in animals the split-products of procaine reduce the incidence and severity of convulsions. Finally, thiamine (vitamin B_1) has been investigated as a supplement to local anesthesia. The question as to whether it diminishes local irritation and toxicity and potentiates anesthesia is still open.

REACTION TO LOCAL ANESTHETIC AGENTS

There is no satisfactory way of testing for possible abnormal responses, and one must rely on the patient's history of reactions to previous injections of local anesthetic agents. Only the very rare allergic responses can be elicited by skin or eye tests, which thus become practically valueless. Allergic reactions, their incidence and symptomatology, will be discussed later.

All previous classifications of reactions to local anesthetic agents have been based chiefly on clinical manifestations without due consideration of the diverse underlying pathological phenomena. The terms used are therefore generic rather than specific. Any of the pathological reactions may assume a predominant role in any given case; and treatment, to be effective, must be directed primarily toward counteracting that particular main reaction.

These requirements are not fulfilled by classification of reactions into "immediate" and "delayed," "reaction" and "idiosyncrasy," "true toxicity" and "idiosyncrasy," "nervous convulsive type" and "asthmatic type." They are only partially fulfilled by the classification of Knoefel and co-workers into "prolonged course with primary respiratory failure" and "short course with primary cardiac failure"; or Betlach's distinction of "circulatory" and "neurologic" reactions. Hellijas and Tovell state that death from severe procaine poisoning is primarily due to respiratory failure, while that from dibucaine poisoning is primarily due to primary cardiac failure.

Our approach to the subject will be under the following headings:

- I *TOXIC RESPONSES IN NORMAL INDIVIDUALS*
  - A. *Central Nervous System Effects*
    - 1. Stimulation
    - 2. Depression
      - *a.* Cerebral cortex
      - *b.* Medulla
        - (1) Respiratory
        - (2) Vasomotor
        - (3) Others
  - B. *Peripheral Effects*
    - 1. Cardiovascular
      - *a.* Direct action on the heart
      - *b.* Action on the vascular bed
    - 2. Respiratory tract
- II *ABNORMAL RESPONSES*
  - 1. Allergic responses
  - 2. Hypersensitivity
  - 3. Idiosyncrasy
- III *REACTIONS NOT DUE TO THE LOCAL ANESTHETIC AGENT*
  - 1. Psychomotor
  - 2. Vasopressor

Pharmacologically, one deals with an overstimulation to the point of depression in all cases of toxic reaction to local anesthetic drugs. All types of reaction may be encountered simultaneously to a varying degree, or consecutively in one and the same case. The relative preponderance of each manifestation must be assessed in each case, and treatment instituted accordingly.

TOXIC RESPONSES IN NORMAL INDIVIDUALS

Central Nervous System Effects.—Stimulation:—According to the principal sites of central nervous system stimulation, a multitude of reactions can occur. Some of these are apprehension, a feeling that "all is not well," loquacity, nervousness and restlessness, choreiform movements, tremors, and twitchings. If cortical stimulation is more pronounced, generalized clonic convulsions may supervene. Tatum and his co-workers have shown that in animals prophylactic barbiturates raise the minimal lethal dose of cocaine three- to fourfold and that protection increases the higher the development of the species of animal. They infer that very high protection should logically be afforded in humans, a contention that has been borne out by clinical observation. Unfortunately, however, barbiturate prophylaxis and treatment have been much overemphasized. Indeed, they do raise resistance to those reactions which are due to central nervous system stimulation—that is, the ones of convulsant type. But as Knoefel and his co-workers have shown, they are quite ineffective in preventing reactions of the "paralytic" type. We would go even further and say that barbiturates, being depressants of the central nervous system (and therefore so useful in counteracting the central nervous system stimulation type of reaction), will be decidedly harmful in those cases in which central nervous system depression follows on stimulation. Again, areas of depression may coexist with others of cortical stimulation, and in all such cases barbiturates over and above the strict requirements to prevent or counteract convulsions may potentiate such depression to a dangerous degree. The depression which is most feared is that of the vital centers in the medulla. It is precisely these centers which are often depressed simultaneously with cortical stimulation and which are also most forcefully depressed by barbiturates. Tatum has shown that if cortical manifestations of stimulation are controlled, the medullary centers are more resistant, and the animal exhibits an increased tolerance toward the drug. If uncontrolled, the cerebral stimulus so affects the poisoned medullary centers as to lead to their complete failure. He has also demonstrated that the likelihood of recovery is inversely proportional to the time the convulsions are permitted to continue. Burstein, from his observations on the treatment of acute arrhythmias during anesthesia by intravenous procaine, carries the argument one step further by stating that general anesthesia, not only barbiturates, probably affords specific protection against the stimulating action of procaine on the central nervous system.

On rare occasions central nervous system stimulation may manifest itself solely or predominantly by an increased rate and/or depth of respiration or by the appearance of tachycardia, because of selective stimulation on the part of the local anesthetic drug of the central respiratory or vasomotor mechanisms, respectively. Undue stimulation of the vomiting center may produce nausea, gagging, or actual vomiting. These reactions are of little clinical import by themselves, except in that they indicate the existence of a toxic reaction. They thus serve as warning signals that more dangerous reactions may possibly supervene.

From the foregoing considerations, the following line of treatment emerges for those cases in which central nervous stimulation is the predominant feature. Prophylactic, short-acting barbiturates are desirable; they should be given intramuscularly about two hours before local anesthesia is begun, and their administration should be repeated if necessary. As soon as signs of central nervous system stimulation become apparent, for example, anxiety, excitement, or confusion, one should prepare injections of intravenous ultra-short-acting barbiturates, giving minimal doses in an attempt to prevent the onset of convulsions if the mild warning signs show no tendency to abate spontaneously or if they keep increasing in intensity. If the milder manifestations have not been observed and true tremors or convulsions are the first signs of a toxic reaction, then ultra-short-acting barbiturates must be given intravenously without delay. They should be administered slowly, however, and the effect observed. Only a sufficient amount should be given to arrest these tremors or convulsions, thus minimizing the depressant side-effects of the barbiturate on the medullary centers and on the vascular bed. Meanwhile a close check must be kept on the pulse and the blood pressure, and oxygen should be administered. Convulsions, whatever their cause, invariably carry with them a degree of hypoxia from interference with the muscles of respiration, which become involved in the convulsive process. Thus, independent of the state of the respiratory center, or may not be depressed, maintenance of adequate oxygenation is mandatory. But as a degree of medullary depression must always be assumed to accompany cortical stimulation, administration of oxygen must be started as soon as the first signs of stimulation become apparent and before convulsions appear, so that hypoxia may be prevented at all costs.

In an attempt to prevent reactions due to central nervous system stimulation, various authors have recommended the simultaneous administration of procaine and barbiturates and Tormey has described the synthesis of a procaine barbiturate instead of the usual hydrochloride. It is claimed that this product is more potent by one-third than the hydrochloride and that it has some sedative properties. Tormey predicts that it may also be safer because of the barbiturate radical. This, however, is still under investigation, and the question must remain open for the time being.

Depression:—Central nervous system depression may follow or accompany stimulation, but the phase of stimulation may be transient and depression appear to be primary. This fact has prompted some observers to state that toxic manifestations after procaine injection are the result of medullary depression; but we believe that some degree of stimulation, however slight, invariably precedes or accompanies such depression. This apparent primary depression has been observed repeatedly where procaine s been given intravenously for therapeutic purposes and re unconsciousness has supervened without obvious rtical stimulation. Allen, who has described this reac- on in some detail, draws attention to the fact that the faculty of speech is lost before the onset of unconsciousness, and thus serves as a useful warning sign.

Apart from loss of consciousness, central nervous system depression is characterized by flaccidity, relaxation, and respiratory and vasomotor depression. Death ensues from respiratory failure.

Central vasomotor reactions are characterized by manifestations such as fainting, pallor, cyanosis, palpitations, and precordial discomfort. Typically, procaine and related synthetic local anesthetics cause bradycardia presumably through sympathetic blocking, whereas in cocaine reactions tachycardia is engendered by sympathetic stimulation. Blood pressure responses are variable with all agents. Sudden cardiovascular collapse and death are relatively rare, except after marked overdose. It is worth noting that a relatively large number of these fatalities or of severe reactions have followed topical anesthesia of the throat and larynx, and that in most cases concentrations and doses have been used that we consider to be within a potentially toxic range. Other fatalities have followed a second administration of an anesthetic after an uneventful first one under allegedly identical conditions. But we have been unable to find any conclusive evidence from the description of these cases that one dose sensitizes to a second injection, as is claimed. Neither inadvertent intravenous injection nor an overdose, relative or absolute, can be definitely ruled out in the cases cited by these authors. Moreover, Allen reports that some patients have had uneventful intravenous injections of procaine both before and after one which was accompanied by loss of consciousness. This would seem to rule out a state of sensitization from the first administration and confirm our view that when a reaction occurred it was due to an overdose.

Treatment of central nervous system depression is directed toward the maintenance of adequate respiration and circulation. Artificial or assisted respiration with oxygen must be instituted at the first indication or suspicion of impending hypoxia, as we have pointed out previously. In rabbits, artificial respiration alone protects from three to three and one-half times the minimal lethal dose of cocaine, according to Tatum; but this is not so in higher species of mammals.

Knoefel and his co-workers have found that respiratory stimulants are of no value in effectively combating respiratory depression from local anesthetic drugs. We agree, and would even go so far as to say that they are actually contraindicated. We have found nikethamide (coramine®), picrotoxin, and similar drugs of little use in these cases.

Just as in central respiratory depression our line of attack is on the maintenance of the peripheral mechanism by artificial respiration rather than by the administration of central stimulating drugs, so also in vasomotor depression of central origin do we prefer to rely on vasopressor drugs with a minimum of central nervous system effect. We feel that overstimulation of the depressed central mechanism may only serve to still further depress these centers.

In the actual treatment of central vasomotor depression we have found cyclopentamine hydrochloride ("clopane") and methoxamine hydrochloride (vasoxyl®) to be the drugs of choice because of their prompt and prolonged action with minimal central nervous system side-effects. Doses of 10 mg. intravenously usually will be found adequate. A slight head-down tilt of the table is recommended because this will aid in maintaining as satisfactory a blood supply to the vital centers as is possible under the circumstances. This tilting of the table must be effected gradually and gently, and should not exceed 10 degrees, since circulation otherwise will be still further embarrassed and any advantage of the head-down position will be lost. Administration of fluids should be started immediately by someone other than the anesthetist, because the latter's assignment must be a constant and close observation of the patient. The administration of a carbon-dioxide-oxygen mixture may be of value in these instances, because of the cerebral vasodilatating, peripheral vasoconstricting, and central nervous system stimulating effects of carbon dioxide.

Cardiovascular Peripheral Effects.—Direct Action on the Heart:—We know from the work of Beck and Mautz, Burstein and his group, Tovell and Barbour, Graubard and Peterson and others that intravenous procaine in therapeutic doses reduces myocardial irritability; and this property is being made use of clinically. Hatcher and co-workers feel that direct toxic action on the heart is the chief cause of death after intravenous injection of large doses, respiratory failure being a secondary phenomenon. Knoefel and his associates are of the opinion that in subcutaneous injection the first organ to respond to the small amount of local anesthetic in the blood is that organ which is the most sensitive—namely, the brain. In intravenous injection, on the other hand, the heart, being the first organ to be reached by a massive dose, may be the first to fail. They feel justified in this assumption, having observed that drop of blood pressure in these cases follows injection of the drug so closely, and below the circulation time, as to rule out a primary effect on the medullary centers. This concept would explain the rare cases of fatalities occurring immediately on injection, while in other less rapid cases of fast absorption from a highly vascular area it may at least be a partial factor.

Treatment is that of cardiac arrest, with artificial respiration and institution of the routine of manual artificial circulation with all that this line of treatment implies.

Action on the Vascular Bed:—The signs and symptoms here are those of *peripheral vascular collapse.* Treatment should be aimed at combating stagnant hypoxia by the use of vasopressors, fluid therapy, oxygen, and a slight head-down tilt of the table.

Peripheral Effects on the Respiratory Tract.—These are exceedingly rare manifestations, characterized by such phenomena as bronchospasm, asthma-like attacks, and other rare and often somewhat bizarre conditions such as respiratory hypersecretion, rales, and rhonchi. These are probably expressions of an allergic state, and will be discussed more fully below.

ABNORMAL RESPONSES

Allergic Responses.—Allergy is defined as an altered reactivity of the tissues caused by the formation and deposit of specific antibodies.

If no history of previous exposure to the local anesthetic drug can be elicited, sensitization may have been caused by the administration of related substances, such as phenylalanine, tyrosine, or paraaminobenzoic acid, which is a component of the vitamin B group.

Allergic-type reactions manifest themselves primarily by skin eruptions, such as hives or angioneurotic edema. Other histamine-like reactions, as for instance bronchospasm and hypotension, also occur. However, the comparative rarity of allergic reactions must be emphasized again; and hence the overwhelming majority of cases in which fall of blood pressure occurs are due to vasomotor depression and not to allergy. Cullen states, and we agree with him, that 99% of all reactions to local anesthetic agents are not anaphylactic or allergic in nature unless accompanied with a skin reaction. One reaction that is undoubtedly allergic in origin and that is not too uncommon is that of contact dermatitis from the application of local anesthetic ointments. Their specificity has been proved by patch tests, and it appears that the presence of eczema increases the susceptibility to this reaction. Another example of contact dermatitis is that which has been known to develop in some dentists from repeated contact of their hands with local anesthetic drugs.

The rarity of allergic manifestations after injection of local anesthetic agents causes this type of reaction to assume a greatly subordinate role.

Hypersensitivity.—In hypersensitivity, toxic reactions of the usual pattern will occur from a minimal dose of a drug. We have already alluded to the comparative rarity of this phenomenon. Suffice it to restate that any of the previously mentioned reactions can thus occur with an average dose in a susceptible individual, simulating the conditions that would otherwise result had an absolute overdose been administered to a normal person.

Treatment is instituted on the basis of the predominant pathological manifestation.

Idiosyncrasy.—Idiosyncrasy is defined as an abnormal or unusual response to a drug, and may occur from very small doses. It is thus akin to hypersensitivity, varying from it in that the response may be of an unusual type.

Treatment, again, is along lines dictated by the predominant symptoms. The condition is very rare after *local anesthesia.*

REACTIONS NOT DUE TO THE LOCAL ANESTHETIC AGENT

Psychomotor Reactions.—A number of so-called reactions, incidental to the administration of a local anesthetic, cannot be attributed to the agent itself. That some of these reactions are psychogenic is demonstrated by those patients who faint at the mere sight of the needle or on account of the trauma of skin puncture before any solution has been injected. Is it not logical then to assume that a number of "reactions" on or after injection of the solution may not also be of the neurogenic or psychogenic type of shock? Sachs stresses the importance of the patient's mental attitude, his surroundings, and his confidence in the doctor as factors in his psychic reaction to the administration of a local anesthetic. Thus it becomes apparent that adequate psychic sedation is a matter of prime importance. Some authors advocate rather heavy premedication with barbiturates, amounting to almost basal narcosis.

Vasopressors.—Epinephrine is added to local anesthetic solutions in order to decrease the rate of absorption by vasoconstriction, thus prolonging the anesthetic action and diminishing its toxicity. A further advantage in its use is that it affords a relatively bloodless field, and hence it has been called a "physiological tourniquet." It is not required where cocaine is employed, as this drug has vasoconstrictor properties of its own. It has been said that there exists a synergism between epinephrine and procaine which increases the anesthetic effect per unit weight of the anesthetic agent. One explanation of this phenomenon is that epinephrine sensitizes the nerve endings to the local anesthetic drug. On the other hand, it has also been stated that procaine appears to sensitize to epinephrine.

Epinephrine is a potent sympathomimetic drug which in dilutions of even 1:50,000 causes a rise of blood pressure and an increase in pulse rate. It is contraindicated, therefore, in coronary disease, in which the increased load on the myocardium may lead to cardiac failure. One cubic centimeter of a 1:1,000 solution can precipitate an attack in angina pectoris patients. It should not be used in hyperthyroid patients or in vasolabile subjects. Convulsions have been described following its istration. It is contraindicated in local anesthesia of fingers and toes, as the intense vasoconstriction is known to have caused gangrene. Local cutaneous reactions of allergic type have been described by several authors, and Gordonoff postulates that death or severe reactions after procaine-epinephrine injections may be due to sensitization to epinephrine. His two cases, however, are unconvincing; in the first one the patient was of a markedly vasolabile constitution, and in the second case the procaine-epinephrine solution was given orally.

Maximum vasoconstriction can be obtained with relatively small amounts and dilute solutions (1:200,000), and any excess will only serve to increase toxicity of epinephrine without appreciably enhancing the vasoconstrictor action of the drug. Hence, the crude method of adding a few drops of epinephrine to the local anesthetic solution is to be condemned, as the resulting concentration may vary within some 200%. Waters suggests 5 minims of epinephrine 1:1,000 to each 100 cc. of procaine.

Toxic reactions to epinephrine manifest themselves by tremors, anxiety and nervousness, palpitations, precordial distress, tachycardia, increased rate of respiration, and a rise of blood pressure. Severer reactions may lead to acute cardiac dilatation, pulmonary edema, ventricular fibrillation, and death. Thus they closely resemble reactions due to the local anesthetic agents themselves, and it may be a matter of some difficulty to arrive at a decision in some cases.

Waters has drawn attention to the fact that tachycardia denotes an epinephrine reaction, whereas bradycardia would lead one to suspect a reaction due to the local anesthetic drug itself. As we have seen, cocaine poisoning is characterized by tachycardia; but as this drug is not usually combined with epinephrine, the question of a differential diagnosis does not arise. Waters furthermore states that when tachycardia accompanies the reaction from a synthetic local anesthetic agent, injection may be continued safely with a solution from which epinephrine has been omitted. When bradycardia points toward a reaction to the local anesthetic itself, he advises temporary interruption of the injection and the administration of 5 minims of epinephrine 1:1,000 intramuscularly, after which, when the signs and symptoms of the reaction have subsided, the injection may be completed. We are unable to agree with him on this point, and would recommend that once reactions have occurred the administration should be discontinued and some other anesthetic procedure substituted. Treatment is on symptomatic lines and must include oxygen administration.

Because of the toxicity of epinephrine, many substitutes have been investigated. Of these, cobefrin,® an isomer of epinephrine, is the most valuable. Bieter has stated that the drug has one-fifth the pressor action of epinephrine, but untoward reactions are both less frequent and less severe when they occur. A concentration of 1:20,000 to 1:80,000, according to the concentration of procaine, is recommended. However, Tainter and Throndson have shown, in well-controlled experiments, that cobefrin® does not offer any real advantage over epinephrine; indeed, they have demonstrated that local anesthetic solutions containing cobefrin® are potentially more dangerous to the circulation than those containing standard concentrations of epinephrine. Thus the question of cobefrin® versus epinephrine remains at least somewhat controversial.

SUMMARY

A new classification of reactions to local anesthetics is presented and the management of these reactions discussed.

As a prophylactic measure, an adequate history should be taken, with particular stress being laid on previous local anesthetics and possible complications or sequelae.

The patient should be adequately prepared for the procedure, both psychologically and by the administration of sedative drugs, barbiturates being the drugs of choice.

In the choice of the local anesthetic and the technique of its administration, attention must be paid to the patient's physical status, to correct dosage and concentration of the drug, to the rate of administration, and to the area in which the drug is to be injected.

A close watch must be kept for early premonitory signs of reaction, and steps must be taken to deal with severer reactions, should they supervene. In such cases the type of reaction must be correctly assessed and the appropriate treatment instituted at once.

1853 W. Polk St. (Dr. Sadove)

Wangensteen Suction in Surgery.—Probably nothing has done more to facilitate the recovery of individuals subjected to abdominal procedures than the routine use of gastro-intestinal suction in the immediate postoperative period. . . . As a result of irritation of the peritoneum regardless of the cause, there is a functional inactivity of the gastro-intestinal tract, which persists for varying periods of time according to the degree of trauma. In infections of the peritoneum, trauma to the peritoneum is prolonged and for this reason the associated adynamic ileus is of much more serious importance and significance than that which follows an operative procedure. . . . The length of time gastric suction must be maintained varies according to the degree of trauma, but generally does not exceed twenty-four to seventy-two hours. By careful auscultation of the abdomen, one can determine the return of peristalsis, and as soon as peristaltic sounds become active, the tube can be removed safely.

Although there are some indications for the use of a double tube, these indications in our hands have become less frequent as time passes. In any case, however, in which decompression of the lower intestinal tract is desired and obtained by means of the double tube, it is imperative that gastric suction be maintained likewise. . . . During the time that an indwelling gastric catheter is maintained and suction is applied, nothing is allowed by mouth, because otherwise large amounts of electrolytes will be washed out of the stomach by the gastric lavage. Obviously, the fluids and electrolytes removed by gastric suction must be replaced parenterally. If for any reason . . . prolonged gastric drainage is necessary, it is essential that potassium deficiency should be prevented by the administration of potassium intravenously.—Alton Ochsner, M.D., The Use of Wangensteen Suction in Surgery, *Minnesota Medicine,* October, 1951.

CORTISONE AND CORTICOTROPIN (ACTH) IN DERMATOLOGY

Robert R. Kierland, M.D., Paul A. O'Leary, M.D., Louis A. Brunsting, M.D.
and
John W. Didcoct, M.D., Rochester, Minn.

Since the therapeutic introduction of cortisone and corticotropin (ACTH) in 1949,[1] their scope of application has spread widely. Among the diseases of interest to the dermatologist, disseminated lupus erythematosus and psoriasis were the first in which the effects of these hormones were reported.[2] Since then numerous other dermatological conditions have been treated, and although experience is still limited, it is expanding daily. This report will summarize the results and observations in a variety of dermatoses treated with cortisone or corticotropin or both.

DERMATOSES TREATED

Lupus Erythematosus.—In acute systemic lupus erythematosus cortisone and corticotropin have brought about dramatic symptomatic improvement in seriously ill patients. There is improvement in well-being and in weight. The acute episode may be terminated in so far as the fever, prostration, anorexia, articular pain, and lesions of the skin and mucous membrane are concerned. At times signs of serous involvement have been eliminated, but, for the most part, the visceral changes, notably signs of renal damage and cardiac lesions, have been unaffected.

The laboratory manifestations of the disease are little affected except for the leukopenia which usually disappears. The sedimentation rate is lowered somewhat in most cases, but in our experience it has continued to remain above normal. The reversed albumin-globulin ratio tends to be unchanged or even to become more abnormal; in one case, however, there was a return to normal during a clinical remission of six to eight weeks' duration, after which the patient went into a relapse and failed to respond to cortisone.

The remissions produced in acute lupus by adequate doses of the hormones are temporary, and clinical evidence of relapse is usually seen in two to eight weeks, occasionally longer. As the disease progresses, subsequent courses of therapy are less effective. In most of our patients with acute lupus erythematosus, the disease progressed to a fatal termination in spite of repeated courses of cortisone. One patient in whom peritonitis developed while corticotropin was being administered succumbed six months later of the debilitating effects of uncontrollable chronic infection in the peritoneal cavity. Practically no sign of lupus erythematosus was found at necropsy. In this and in other patients wound healing was unimpaired while they were under the influence of these hormones.

The effects of the hormones on the plasma electrolytes have been more marked in lupus than in other diseases we have treated, possibly because of the renal lesions which commonly are present in lupus erythematosus.

In cases of chronic discoid lupus erythematosus the results of administration of the hormones by injection have been unsatisfactory; occasionally slight benefit in the form of decrease in the erythema and in the size and induration of the plaques has been noted, but benefit could not be maintained with subsequent courses of even a total of 70 gm. of cortisone.

The topical use of cortisone in ointment and in solution in discoid lupus erythematosus resulted in temporary slight improvement in a few instances. No side effects have been noted in such instances.

Syphilitic Interstitial Keratitis and Keratoconjunctivitis of Acne Rosacea.—Cortisone in a suspension of 1 to 2% has been used locally in the acute phase of syphilitic interstitial keratitis with remarkable improvement in three cases and beneficial effect in another. The patients treated have had no recurrence of the interstitial keratitis as yet. Cortisone, given for the keratoconjunctivitis of acne rosacea, was of benefit in one case and not in another.

Scleroderma.—In several cases of scleroderma of the acrosclerotic type, cortisone was given in repeated courses, usually 100 mg. daily for varying periods.[3] In some of the longer courses (up to 42 days) the dosage was often decreased to 50 mg. daily in the latter part of the course. All the patients experienced some euphoria, plus a subjective sense of improvement and in the cases of short duration greater mobility of the fingers, wrists, and jaws. The symptoms referable to the joints were much decreased. Objective improvement of a measurable degree, in motion of joints or in increase of skin temperature and peripheral circulation, was slight. The subjective improvement lasted for several months after a single course in one case; it was of shorter duration in the others, but subsequent courses regularly produced increasingly longer periods of partial relief. One patient in the series died of an undetermined type of infection characterized by a morbilliform eruption, encephalitis, and terminal bronchopneumonia. The symptoms of this condition developed at the end of a course of cortisone and failed to respond to treatment with antibiotics.

Three patients had biopsies before and after treatment with cortisone; the dermatosclerosis of only one

---

Read before the Section on Dermatology and Syphilology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

From the Section on Dermatology and Syphilology, Mayo Clinic (Drs. Kierland, O'Leary and Brunsting); Fellow in Dermatology and Syphilology, Mayo Foundation, University of Minnesota (Dr. Didcoct).

[1] Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone; Compound E) and of Pituitary Adrenocorticotrophic Hormone on Rheumatoid Arthritis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 181-197 (April 13) 1949.

[2] Brunsting, L. A.; Slocumb, C. H., and Didcot, J. W.: Effects of Cortisone on Acute Disseminated Lupus Erythematosus, A. M. A. Arch. Dermat. & Syph. **63**: 29-52 (Jan.) 1951; abstracted, Proc. Staff Meet., Mayo Clin. **25**: 479-482 (Aug. 16) 1951. O'Leary, P. A.; Montgomery, H.; Brunsting, L. A., and Kierland, R. R.: Transactions of the Minnesota Dermatologic Society, Arch. Dermat. & Syph. **62**: 596-614 (Oct.) 1950. Baehr, G., and Soffer, L. J.: Treatment of Disseminated Lupus Erythematosus with Cortisone and Adrenocorticotropin, Bull. New York Acad. Med. **26**: 229-234 (April) 1950.

[3] Hines, E. A., Jr.; Wakim, K. G.; Roth, G. M., and Kierland, R. R.: The Effect of Cortisone and Adrenocorticotrophic Hormone (ACTH) on the Peripheral Circulation and Blood Pressure in Scleroderma, J. Lab. & Clin. Med. **36**: 834 (Nov.) 1950. Kierland, R. R., and Hines, E. A., Jr.: Cortisone and Adrenocorticotrophic Hormone (ACTH) in the [illegible]nt of Scleroderma, Arch. Dermat. & Syph. **64**: 549-554 (Nov

patient showed significant pathological change, and this was not of marked degree. A single course of corticotropin was given to each of the other two patients with acrosclerosis. One received 80 mg. daily for 10 days and the other 75 mg. daily for 16 days. Neither received any appreciable benefit. A possible explanation for this failure may have been the fact that the corticotropin was given only once daily in one case and twice daily in the other.

Dermatomyositis.—In this condition our initial experience with three patients given cortisone was discouraging. However, one additional patient, a middle-aged woman who had had symptoms for nine months, derived a marked degree of improvement, as noted by decrease in the cutaneous edema and partial restoration of muscle function, which has been maintained for four months on a daily dose of 50 mg.

Repeated courses of cortisone of two to three weeks' duration were given a girl of 10 years with the acute form of the disease, to a girl of 17 with a subacute form, and to a man of 34 in the chronic phase. The dosage levels were 200 mg. daily in the latter two cases and 100 mg. daily for the girl 10 years. In the second and third cases there was no appreciable change in the muscle strength. The acute dermatomyositis progressed to a fatal outcome four months after the last treatment with cortisone. The subacute condition remained in status quo for seven months after the last dose of cortisone. In the case of hronic disease there was a gradual improvement in ength after the first of two courses; this continued for eral months. The second course did not increase the te of improvement. The patient returned to work as a ruck driver three months after the last course of cortisone, but still had diminished strength and mild erythema of the face. His improvement could not be attributed to the hormone, since a similar change is seen as a spontaneous occurrence in cases of dermatomyositis.

During administration of the hormone there was a tendency in all the cases for excretion of creatine to drop somewhat from the abnormally high levels, but this effect was temporary. No other significant changes were noted.

Erythema Nodosum and Urticaria.—In erythema nodosum the use of either hormone resulted in the rapid involution of the painful joints, tender cutaneous nodules, and decrease of fever but did not affect the elevated sedimentation rate. On withdrawal of the hormones symptoms tended to recur within a few days. When the disease was burned out, discontinuance of use of the hormones was not followed by new crops of nodules. The effect may be compared with that seen in cases of rheumatic fever in which the hormones have been used to suppress the damaging inflammatory lesions while the disease process runs its usual course of several weeks.[4]

In urticaria of the acute type, such as that due to penicillin and occasionally aureomycin, the use of corticotropin was followed (in a few to 36 hours) by permanent relief. Doses of 25 mg. three or four times on the first day followed by rapid decrease in the dose appeared to be satisfactory. Treatment was tapered off during the course of four to five days in most instances. In one case of chronic urticaria of nine-weeks' duration, there was no benefit from these hormones. Urticaria of transient nature was produced by use of corticotropin but not by injection of cortisone in one patient with mild pemphigus foliaceus.

Pemphigus Vulgaris.—Both hormones when used in adequate doses frequently produce healing of denuded areas and suppress the formation of new bullae. They also improved the general health of the patients. With corticotropin, adequate dosage has appeared to be 75 mg. or more daily. With cortisone 200 mg. daily for several days was adequate as the beginning dosage. After control of lesions doses were reduced to the lowest effective level for maintenance. The optimal dosage for maintenance has not been well established with corticotropin because of variability in response and since courses were generally short, but with cortisone it varies between 50 and 100 mg. per day.

No lasting effect was noted after cessation of treatment; relapse was seen in three to seven days in all cases, so it appears that the optimal maintenance dosage must be established in each case. How long use of these dosages can be continued has not yet been determined. A fatal outcome was not prevented by use of cortisone in one case of severe pemphigus vulgaris in which the initial response was adequate. Under reduced dosage new lesions developed, and the patient gradually failed in spite of supportive therapy.

In general, it appears that cortisone and corticotropin are effective in inhibiting the development of new lesions, improving the well-being of the patient, and producing remissions of varying duration, but the most desirable maintenance dosage and the duration of treatment must be determined for each patient.

Pemphigus Foliaceus.—The results of treatment of the foliaceus type of pemphigus have been more encouraging than in the vulgaris form, although variability of response was noted also. Under the administration of either corticotropin or cortisone the blistering ceased and the exfoliative process was reduced in all cases. The beneficial effects were prolonged after cessation of treatment. It appeared that early pemphigus foliaceus responded more completely and rapidly than that of long-standing and widespread involvement.

Psoriasis.—Patients with psoriasis and psoriatic arthritis were given the hormones because of the presence of the arthritis, since it has been found that corticotropin and cortisone have but little effect on the skin lesions of psoriasis. The psoriatic arthritis showed the same measure of improvement that is seen in rheumatoid arthritis.

Lymphoblastoma.—Corticotropin was used in one case of mycosis fungoides in which intractable pruritus, as well as nodular infiltrations in the skin, was present. The pruritus decreased while corticotropin was given, but the corticotropin had little visible effect on the tumors. The pruritus recurred after cessation of therapy, but the patient was given much needed relief for periods of 12 and 6 days on two occasions. The only value was in symptomatic relief.

In a case of primary cutaneous Hodgkin's disease with many small nodules in the skin, corticotropin produced a definite reduction in the nodular infiltration and also relieved the mild to moderate itching. Later in the course of therapy, which lasted 25 days, new nodules appeared around the periphery of the old lesions. The patient did not respond to roentgen therapy before use of corticotropin and responded moderately to oral use of triethylene melamine after corticotropin therapy. The amounts of corticotropin given to this patient were 100 mg. daily for 15 days, 50 mg. daily for 6 days, then 40 and 30 mg. daily for 3 and 4 days, making a total of 2,040 mg.

---

[4] Barnes, A. R.: Effects of Cortisone and ACTH in 14 Patients With Acute Rheumatic Fever, Proc. Staff Meet., Mayo Clin. **25**: 478-479 (Aug. 16) 1950.

Atopic Dermatitis and Generalized Neurodermatitis.—For the purposes of this discussion we have included under atopic dermatitis those patients whose eczema began in infancy or early childhood and persisted or recurred throughout their later life and whose background showed hay fever and asthma. The generalized neurodermatitis group included cases with widespread, usually generalized, dermatitis, the duration of which was months or years, but which had first appeared in adult life (ages 26 to 64). Most of these patients showed no previous or family background of hay fever or asthma. The majority of patients in both groups were given corticotropin in doses of 60 to 100 mg. daily, usually with dosage reduction after improvement started.

In the atopic group the response was fairly uniform and consisted of considerable reduction in the pruritus. In some cases there was almost complete relief. The lichenification gradually diminished during courses varying in length from four days to three weeks. It was felt that the over-all improvement experienced by the patients was hastened and increased by the interruption of the pruritus. The majority of patients experienced relapse in varying periods of time after withdrawal of corticotropin, and no permanent effect on the basic disease could be ascribed to the hormones.

In the generalized neurodermatitis group the effects of corticotropin therapy were similar in that the pruritus was often relieved and the patient's skin seemed to improve more rapidly. Some patients with exudative lesions experienced a drying effect. A few patients, however, obtained little or no benefit from corticotropin therapy at levels of 60 to 100 mg. daily. One patient who received cortisone was unimproved. Relapses were noted after cessation of treatment in this group also, but, in general, use of the hormones (mainly corticotropin) seemed worth while, although not quite as valuable as in the atopic group. Patients with neurodermatitis have a tendency to become dependent on the hormone; accordingly, it is suggested that the treatment be reserved for patients with intractable symptoms and that the courses of treatment be of short duration.

GENERAL CONSIDERATIONS

The physiological effects of cortisone and corticotropin have been thoroughly discussed by others[5] and consist mainly of the clinical and metabolic alterations seen in Cushing's syndrome. These are "rounding of the facial contour, hirsutism, acne, keratosis pilaris, muscular weakness, edema, amenorrhea, cutaneous striae, mental depression, impairment of carbohydrate tolerance, negative nitrogen balance, increased excretion of corticosteroids in the urine, and hypochloremic hypopotassemic alkalosis."[5] In addition, changes in the psyche were noted.

Few of our patients showed any of these alterations to a significant degree. Some of those who had disseminated lupus erythematosus had marked degrees of fluid retention and hypopotassemia. For the majority of patients with dermatosis the courses of treatment were short and significant physiological alterations were seldom seen.

In addition to Cushing's syndrome, certain other changes were noted. The commonest of these, which appeared in the majority of cases, were changes affecting the psyche. Mental stimulation and euphoria were frequent; patients felt "full of pep" and much more active; their appetites increased to abnormal degrees, and some were unable to sleep well. Anxiety and agitation also were noted, as was a tremor of the hands. A few patients experienced slight and transient changes in their mental stability; two patients became frankly psychotic for a brief period, but recovered completely in two to four weeks after withdrawal of treatment. Both patients in whom the latter complication developed were receiving 200 mg. of cortisone daily. One had psoriasis and the other disseminated lupus erythematosus.

Occasionally thrombophlebitis develops in patients receiving cortisone.

Cortisone tends to suppress the symptoms and surface signs of infectious diseases, and this action may prevent the recognition of unexpected infections in patients with various dermatological conditions. We have encountered this masking effect in a pneumococcic septicemia with diminished febrile response; subcutaneous abscesses with no erythema and little pain; poorly localized peritonitis followed by general sepsis; miliary tuberculosis recognized at necropsy in a case of disseminated lupus erythematosus; and finally a rapidly fatal infection of undetermined cause (questionably virus) characterized by a morbilliform eruption and encephalitis in a case of scleroderma. The seriousness of the development of a superimposed bacterial or virus infection during a course of hormone therapy cannot be overemphasized. Recent reports indicate that this is particularly true in cases of tuberculosis, both active and latent, in which the hormones may allow an exacerbation of the disease.[6]

Indications for Use of the Hormones.—There are no absolute indications for use of cortisone or corticotropin in dermatological conditions, and there is little evidence that the effect of the hormones is curative; however, in certain diseases, such as fulminating lupus erythematosus or pemphigus, their use may be temporarily lifesaving. In other less serious conditions they may have beneficial effects of varying degrees.

Contraindications.—These are dictated largely by the physiological effects of the hormone in conditions in which these effects may aggravate already existing pathological states. The following conditions prohibit or restrict the use of the hormones; however, exceptions may be made if the need is sufficiently great and caution is used:

1. The presence of edema or a predisposition to retention of fluid, especially congestive heart failure and

---

[5] Sprague, R. G.; Power, M. H.; Mason, H. L.; Albert, A.; Mathieson, D. R.; Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: Observations on the Physiologic Effects of Cortisone and ACTH in Man, Arch. Int. Med. 85: 199-258 (Feb.) 1950.

[6] ATS Warns on ACTH and Cortisone Effect on Tuberculosis Tests, Bull. Nat. Tuberc. A. 37: 4 (Jan.) 1951.

nephritis, is a contraindication. The renal damage in disseminated lupus erythematosus is an exception, but the need for close observation is greater than usual because of the danger of electrolyte imbalance.

2. Newly acquired or latent infection, especially tuberculosis, also contraindicates use of these hormones.

3. Psychosis or marked instability to stress situations is another contraindication. Rome and Braceland [7] expressed the opinion that the administration of cortisone or corticotropin to a patient who has previously proved unstable in a situation of stress is likely to cause potent stress and recurrence of the instability, sometimes to the point of psychotic reaction.

4. Hypertension may be aggravated, but to date none of our patients have had hypertensive disease.

5. Diabetes mellitus contraindicates the use of these hormones, since they are known to increase the severity of the diabetes and to reduce the sensitivity to insulin. None of the patients in our series had diabetes.

Recommended Dosage of Cortisone.—In severe conditions, especially when patients are febrile, 300 mg. may be given the first day in two injections several hours apart. Subsequent doses of 100 to 200 mg. daily (the latter in divided doses) may be employed until improvement is noted, at which point doses of 50 to 100 mg. daily are given for variable periods to maintain improvement. In most of our cases injections were used, but more recently cortisone in tablet form has been used in some cases after the maintenance stage was reached.

Recommended Dosage of Corticotropin.—This hormone is usually given in divided doses of 15 to 25 mg. at intervals of six to eight hours. For severe conditions 100 mg. may be given daily for one to several days, then smaller doses are used. These may vary from 50 to 80 mg. daily down to as little as 10 mg. in one injection a day. For certain patients these small doses when given at bedtime may be sufficient to reduce nocturnal pruritus.

No specific rules of dosage have been established as yet because of the variabilities in response as well as individual differences in the manifestations of the undesirable physiological effects. These variables necessitate individualization in decisions regarding dosage. The optimal dosage has not been established, especially in regard to duration. The full effects of long-term administration have not been fully explored; hence, it is believed wiser to pursue a conservative course with small doses particularly in the treatment of the nonfatal types of skin disease.

COMMENT

It is apparent from the previous remarks that remissions of varying duration may be obtained in a variety of conditions which the dermatologist is called on to treat. Yet, great as the action of these hormones is, they do not provide cures; rather they appear to buffer or to shield the target tissues from the provoking agent and because of this suppress many of the serious disabling symptoms of the disease.

We wish to reemphasize that corticotropin and cortisone are powerful in their physiological actions and, hence, cannot be administered promiscuously or without full knowledge of their effects. While physiological side effects are usually transient and reversible, such reversibility does not detract from the importance or potential seriousness of such effects. In other words, it is recommended that these hormones should not be administered haphazardly or for reasons of "something or nothing more to do." We are convinced that too many times these agents have been given for insufficient reasons and without knowledge of their properties and potentialities.

Mention has been made of the action of these hormones on intercurrent infections, those in which the clinical evidence of infection is minimal or absent while the infection goes on unhindered. In certain instances intercurrent infections of serious or fatal nature have developed, the symptoms of which were concealed while the patient was under the influence of the hormones. Patients have succumbed to septicemia, miliary tuberculosis, peritonitis, hemorrhagic pancreatitis, perforated duodenal ulcers, and encephalitis. Reports are now appearing in the literature citing other similar experiences, and warning is given against the use of corticotropin and cortisone during or shortly after infective states. Corticotropin or cortisone should not be given to patients with acute or chronic infections due to Mycobacterium tuberculosis, staphylococci, streptococci, meningococci, pneumococci, and others. Cortisone seems to inhibit those factors which are prominent in the cellular response to disease, but the responsible organism is uninhibited. If infection supervenes while a patient is under treatment with cortisone or corticotropin, early treatment with antibiotics in adequate dosage is most important. If the infection does not produce severe organic stress, the administration of the hormone should be discontinued.

SUMMARY AND CONCLUSIONS

Cortisone and corticotropin (ACTH) have been administered in patients with acute and chronic lupus erythematosus, psoriasis, scleroderma interstitial keratitis (locally applied cortisone used), lymphoblastoma, urticarial and eczematous states, pemphigus vulgaris, and pemphigus foliaceus. From an analysis of our results these hormones are recommended for the relief of symptoms but not with hope of cure. Worth-while results have been obtained in cases of acute lupus erythematosus, early scleroderma, pemphigus vulgaris, pemphigus foliaceus, psoriatic arthritis, certain forms of exfoliative dermatitis, drug and serum reactions, and for the intense pruritus of some eczematous states. Syphilitic interstitial keratitis is influenced remarkably by the local instillation of 1 to 2% suspension of cortisone. These hormones are not considered efficacious at this time for uncomplicated psoriasis, the usual eczematous patient, or for lymphoblastoma of the skin. In all cases an effort should be made to find the minimal maintenance dose that provides suppression and relief of symptoms. Variation in reaction of individual patients to these hormones prohibits a statement as to duration of treatment. These hormones should not be administered promiscuously, without knowledge of their physiological effects and dosage and of the influence of infection on those receiving such treatment.

102 Second Ave., S.W. (Dr. Kierland).

---

[7] Rome, H. P., and Braceland, F. J.: Use of Cortisone and ACTH in Certain Diseases: Psychiatric Aspects, Proc. Staff Meet., Mayo Clin. **25**: 495-497 (Aug. 16) 1950.

PSYCHOLOGICAL RESPONSE TO CORTICOTROPIN, CORTISONE, AND RELATED STEROID SUBSTANCES

PSYCHOTIC REACTION TYPES

Howard P. Rome, M.D.
and
Francis J. Braceland, M.D., Rochester, Minn.

In previous reports [1] we have summarized the psychological responses which attend the administration of corticotrôpin (ACTH), cortisone, and other related steroids. It has been indicated that these responses are but one aspect of the widespread change induced by these agents—that the total adaptation of the human organism is altered by a multiplicity of factors. These relate to the direct and indirect effects on both the internal and external environments. The rapidity as well as the degree of change produced constitutes a stress which in turn mobilizes resources characteristic of the patient. Hence, the clinical form which the response takes is determined in large part by the habitual organization of the patient's personality; most particularly by the preferred way in which he has responded to stress in the past.

The descriptive aspects of the range of responses noted have been grouped into four clinical grades. Grade 1 is comprised of deviations in mood, usually in the direction of elevation. There are commensurate changes in the patterns of thinking and behavior which reflect these mood alterations. Grade 2 differs from the grade 1 response only in a quantitative sense. Grade 2 responses are detected more readily merely because they are more pronounced. It is for this reason that euphoria has been reported to be typical.[2] The grade 3 response subsumes what are typically the psychoneurotic adaptations to this stress. These adaptations, therefore, comprise a gamut of clinical forms clinically indistinguishable from the usual psychoneurotic reaction types. The grade 4 response designates the psychotic reaction types which are encountered occasionally. These also vary clinically in accordance with the organization of the patient's previous personality.

The striking deviations in mood, thought processes, and behavior which distinguish psychotic reactions from all others, furnish substantial clues to a better understanding of some of the underlying physiological and psychological dynamics responsible for these reactions.

There have been suggestions [3] that some psychiatric disorders (including some of the psychotic reaction types) are related to the altered function or the direct and indirect effects of the anterior pituitary-adrenal cortical activity. If these hypotheses are valid, the nature of the events which result in the occurrence of a psychotic reaction following the administration of these hormones is of considerable significance.

However, many of the hypotheses concerning the etiology of psychiatric disorders which have been advanced are partisan in the sense that they tend to ascribe the resulting clinical syndrome to more or less "specific" factors which arise either in the internal or the external environments. It would appear that such conclusions tend to oversimplify the determinants of the enormous complexity of human function. Halliday,[4] in a discussion of some of the principles of psychiatric etiology, emphasized the need to consider the resulting pattern of morbid reaction a consequence of a multiplicity or synergy of causes. Our observations tend to support his thesis.

Recent speculations on the theory of control and communication underscore this hypothesis of interrelated causes.[5] Essentially, the operative principle seems to be that the stability and integrity of the human organism is maintained by the harmonious integration of a series of interdependent buffer-like systems. In addition to specific, more or less independent functions, under certain conditions each system is capable of provoking extensive changes in other systems. An operation analogous to that of a feed-back type of control is suggested as a possible explanation of the dynamic relationships which link otherwise autonomous parts—hence, the error in limiting attention to one element of such a complex without regard for its influences and the consequences of such influences on all the other components.

As this operation applies to the psychiatric phenomena which attend the administration of these hormones, it

---

From the Department of Neurology and Psychiatry, Mayo Clinic.

Read before the Section on Nervous and Mental Diseases at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

[1] Rome, H. P., and Braceland, F. J.: Use of Cortisone and ACTH in Certain Diseases: Psychiatric Aspects, Proc. Staff. Meet., Mayo Clin. **25**: 495-497 (Aug. 16) 1950. Rome, H. P., and Braceland, F. J.: The Psychologic Response to ACTH, Cortisone and Related Steriod Substances: The Psychotic Reaction Types, unpublished data. Rome, H. P., and Braceland, F. J.: The Effect of ACTH, Cortisone, Hydrocortisone and Related Steroids on Mood, unpublished data.

[2] Boland, E. W., and Headley, N. E.: Management of Rheumatoid Arthritis With Smaller (Maintenance) Doses of Cortisone Acetate, J. A. M. A. **144**: 365-372 (Sept. 30) 1950. Markson, D. E.: Prolonged Treatment of Rheumatoid Arthritis With Pituitary Adrenocorticotropic Hormone (ACTH), ibid. **141**: 458-459 (Oct. 15) 1949.

[3] Sackler, R. R.; Sackler, M. D.; van Ophuijsen, J. H. W.; Tui, C., and Sackler, A. M.: An Appraisal of the Current Status of Histamine Biochemotherapy in Psychiatry and the Theoretical Significance of Its Effects: Part II. Endocrinologic Orientation to Psychiatric Disorders, J. Clin. Psychopath. **12**: 5-14 (March) 1951. Sackler, M. D.; Sackler, R. R.; van Ophuijsen, J. H. W.; Tui, C., and Sackler, A. M.: An Appraisal of the Current Status of Sex Steroid Biochemotherapy in Psychiatry: Part III. Endocrinologic Orientation to Psychiatric Disorders, ibid., **12**: 15-24 (March) 1951. Pincus, G.; Hoagland, H.; Freeman, H.; Elmadjian, F., and Romanoff, L. P.: A Study of Pituitary-Adrenocortical Function in Normal and Psychotic Men, Psychosom. Med. **11**: 74-101 (March-April) 1949. Friedländer, J. H.; Perrault, R.; Turner, W. J., and Gottfried, S. P.: Adrenocortical Response to Physiologic Stress in Schizophrenia, ibid. **12**: 86-88 (March-April) 1950. Selye, H., and Fortier, C.: Adaptative Reactions to Stress, A. Res. Nerv. & Ment. Dis. Proc. (1949) **29**: 6-18, 1950; Psychosom. Med. **12**: 149-157 (May-June) 1950. Selye, H.: The Physiology and Pathology of Exposure to Stress: A Treatise Based on the Concepts of the General-Adaptation Syndrome and the Diseases of Adaptation, Montreal, Acta, Inc., 1950, pp. 671-676. Altschule, M. D.: Physiologic Observations in Mental Disease, Bull. New England M. Center **11**: 229-234 (Dec.) 1949.

[4] Halliday, J. L.: Psychosocial Medicine: A Study of the Sick Society, New York, W. W. Norton & Company, Inc., 1948, pp. 15-41.

[5] Wiener, N.: Cybernetics or Control and Communication in the Animal and the Machine, New York, John Wiley & Sons, Inc., 1948. Wiener, N.: The Human Use of Human Beings; Cybernetics and Society, Boston, Houghton Mifflin Company, 1950.

appears that each psychological and physiological factor acts as a vector which has the dimensions of magnitude and direction. The resultant clinical syndrome is a unique composite of these many forces. In the final analysis, an extensive knowledge of the specific operations of these many forces in each patient is necessary in order to identify accurately their precise role. The grade 4 psychotic reactions, because of their dramatic characteristics, provide the most striking illustrations of these dynamic forces in operation.

There are certain features common to the reactions of all patients in whom these responses have occurred:

1. The psychological responses vary widely in degree, duration, and clinical form. The clinical form is determined in large part by the previous organization of the patient's personality.

2. The psychotic reactions tend to occur in patients who have made marginal psychological adjustments in the past.

3. The grade 3 and 4 responses usually are associated with profound change in the underlying physical disease. This does not necessarily imply a cause-and-effect relationship; rather, each seems to be reflective of a change in the level of total adaptation brought about by these agents.

4. As yet, there is no consistent correlation between the demonstrable metabolic changes produced by these hormones and the psychiatric syndrome which may be ciated. However, in a number of patients with various there has been an intensification of the psychi- symptoms which seems to coincide with rather ed shifts in the electrolyte balance.

5. The fact of sudden or great change itself, which im- s a different level of adaptedness rather than a specific kind of change, seems to be an important denominator. A given mode of adaptation seems to depend more on he relative integration of all the component parts of the nternal and external environments than it does on the absolute level of any one part. What ordinarily would be a wide deviation from the norm in any component can be tolerated provided that it is within certain out-ide limits and is brought about within a sufficiently ong period of time to permit accommodation. Thus, vulnerability to stress, from a psychiatric standpoint at least, seems to depend not so much on a specific factor n the internal or external environments, but rather on he residual capacity of the organism to tolerate stress of any kind at that time.

6. The change from one dynamic level of adaptedness o another, even though it is in the direction of a statisti-al norm, has not only physiological significance but also onsiderable psychological (conscious and unconsciously ymbolic) meaning. In this connection, the sudden "cure" of a chronic illness, for example, is fraught with n equally significant loss of the secondary psychological gains of that illness. This is a stress as important, for ex-mple, as a decrease of 50% in the concentration of serum potassium in the precipitation of a grade 4 re-ponse.

REPORT OF CASES

The following cases illustrate the nature of the influences which appear to be important factors in the devel-ment of the grade 4 psychotic responses.

Case 1.—Marked catatonic excitement developed in a single, white, male theological student, 26, with a profound classical catatonic schizophrenic stupor of three-months' duration after receiving 1.3 gm. of cortisone. Treatment was terminated after he had received a total of 2.2 gm. of cortisone over a 15-day period because of extreme progression of the almost unmanageable excitement which ensued. During this time fluid retention had developed, as well as some other changes characteristic of hypercorticalism. Electroshock therapy not only terminated the episode of excitement, but also induced a complete remission of symptoms which, to the time of this report, had been maintained for two years.

Case 2.—A single, white woman, 19, with acute disseminated lupus erythematosus was treated with 3.8 gm. of cortisone. Except for a period of four days, when her daily dose was 100 mg., she received 200 mg. of cortisone daily. Prior to the development of the disease she had been well except for an obsessive-compulsive-ruminative neurosis of mild degree. She had received psychiatric treatment for a brief time elsewhere. Her problem was essentially a neurotic one, manifested by moderately intense compulsive-ruminative features: aloof, self-absorbed behavior and rather typical sexual conflicts about which she had much anxiety and guilt. Associated with cortisone therapy was a fulmination of these manifestations of her psychological conflicts to the point where closed-ward supervision was necessary. During the acute phase her psychological response was descriptively that of a paranoid-schizophrenic reaction. This acute response subsided within several weeks, during which time she received daily psychotherapy and sedation. A second course of cortisone (2 gm.) was given when the systemic signs of disseminated lupus erythematosus again became evident. The grade 4 psychological response which had been observed previously was again exacerbated, although on this second occasion the intensity seemed to be moderated somewhat by the sedation and psychotherapy she received. Seven days after the use of cortisone was stopped, the patient died. For one week prior to this time she had evidenced less anxiety and concern, less preoccupation with the religiosity which had been characteristic of her ruminations, and less somatic preoccupation.

Case 3.—A married, white farmer, 36, with widespread psoriasis and painful, somewhat incapacitating psoriatic arthritis received 2.2 gm. of corticotropin. In addition to the development of mild evidence of hypercorticalism, he became extremely overactive, tense, preoccupied with the delusions that he had died, had been crucified, and was God. He was disoriented as to time, place, and person, and experienced auditory and visual hallucinations. His acute psychosis, which descriptively was a schizophrenic one of the paranoid variety, subsided spontaneously after 10 days of the usual closed-ward supervision. His background revealed considerable psychological conflict which had resulted in a lifelong schizoid adjustment. He had always been shy and withdrawn: an intensely insecure person who felt that his psoriasis was a direct consequence of childhood masturbation. At the time of this writing the patient had been seen at regular intervals for a year since his discharge; the psoriasis had completely disappeared; the arthritis was greatly ameliorated, and his psychological adjustment was on a nonpsychotic level, at least as good as it was prior to treatment.

Case 4.—A married, white, successful businessman, 49, with three children presented the picture of a reactive depression of moderately intense proportions. His background revealed that he "was always an emotional person." He described himself as being shy, passive, and easily moved to tears by emotionally stressful experiences. On more detailed inquiry, it was evident that from childhood he had been a dependent, insecure person who compensated for feelings of inadequacy and inferiority by being overly scrupulous and overly conscientious and by hard work. For many years he had invested a disproportionate concern in his physical person and the function of his various body parts. He described his typical response in this regard by saying he "was always knocked down by illness."

For a period of 15 months before the onset of his present illness he had had various minor physical symptoms, which culminated in his being hospitalized in his home community after a vacation. Allegedly he had contracted a gastrointestinal infection, to which were ascribed his symptoms of diarrhea, weakness, fatigue, anxiety, and loss of weight. During the physical investigation it was discovered that he had diabetes mellitus of a mild grade. He was treated with various medications, among which was cortisone. Presumably he received 1,500 mg. of cortisone over a period of five days.

The relevant psychiatric findings on his examination at the clinic were those typical of a reactive depressive patient. He was tearful, anxious, and greatly concerned about the possible relationship between diabetes mellitus and mental illness. The only significant feature other than those previously mentioned was that after the first dose of cortisone he had felt stimulated. This salutary experience was rapidly converted into the unpleasant one of depression, preoccupation, tension, and an unsuccessfully controlled emotionality. Despite the subsequent rather traumatic experience of laparotomy for a suspected malignant lesion, the patient's acute affective disorder subsided spontaneously.

Case 5.—In a white widow, 63, with a background of severe headaches of 13-years' duration, a hypomanic reaction with paranoidal coloring developed after the administration of 400 mg. of cortisone. Her background indicated a profound psychoneurotic adjustment of at least 25-years' duration. During these years she had been tense, overactive, demanding, and perfectionistic. At various times her psychological adjustment to her conflicts decompensated, and symptoms developed which descriptively were those resembling the symptoms of conversion hysteria. On past occasions these had been verified by examinations at the Mayo Clinic. Such complaints as "blindness," "circulatory trouble," "heart disease," and "confusion spells" had been investigated extensively without revelation of a demonstrable physiological basis.

The cortisone the patient received had been given for the purpose of offsetting the effects of a previously induced sensitivity to histamine. After four-days' therapy in which she received 100 mg. of cortisone daily, there developed marked insomnia, pressure of speech and thought, flight of ideas, labile affect, vivid dreams and phantasies, suspiciousness, irritability, and ideas of reference and influence. The clinical psychiatric picture was that of hypomania with paranoidal ideation. Forty-one days after the cessation of cortisone therapy the patient had recovered sufficiently from both her physical and mental symptoms to be discharged from the hospital to receive more definitive psychiatric treatment elsewhere. A follow-up report indicated that she was completely asymptomatic about one month later.

COMMENT

The occurrence of a certain percentage of psychotic reactions as a complication of some of the diseases for which these hormones are administered is to be expected. The effects of periarteritis nodosa and acute disseminated lupus erythematosus on the central nervous system, for example, are well known. Then, too, patients with such diseases as psoriasis,[6] chronic ulcerative colitis,[7] gout,[8] and various allergic disorders [9] are thought to be more susceptible to the development of psychiatric complications than other persons. Patients who have Addison's disease similarly show a high incidence of psychological changes.[10]

According to Lemkau and his co-workers,[11] "The combined incidence for all forms of psychosis and psychoneurosis—excluding the disorders of advanced age but including epilepsy—appears to be about 20 per 1,000 individuals living through the age period of susceptibility." It would appear that the number of frank psychoses and psychoneuroses which is encountered after treatment with these hormones exceeds the expected frequency of occurrence of these reactions. In qualification of the foregoing, it must be said that this is an impression which needs demographic verification.

The data with which perhaps these phenomena may be compared derive from reports and observations on the occurrence of gross psychiatric disturbances among patients with Cushing's syndrome.[12] Soffer [13] pointed out that "in occasional instances these alterations are profound and disturbing enough to suggest the more serious psychoses." He stated that depression is most commonly noted and "occasionally mania and excitement and periods of paranoid confusion." Rimbaud and his associates [14] mention the occurrence of confusing psychomotor agitation. Oldenberg,[15] Huddleson and McFarland,[16] Hoff and Shaby,[17] Sarradon,[18] and Murray and Simpson [19] also have described the effects and the close relationships between adrenal cortical function and profound psychological changes. We have made similar observations in a series of patients who had verified Cushing's syndrome, and these will be reported elsewhere.

Although it is evident that there is a considerable difference between (1) the florid, metabolic state which results from adrenal cortical hyperplasia or tumor and (2) the hypercorticalism produced by the purposeful administration of these hormones, the difference is only a matter of degree and duration. It would appear that the rate at which the effects of hypercorticalism are produced, as well as the magnitude of the changes brought about, are the most significant determinants of the ultimate stress which is imposed. In keeping with this hypothesis are the observations of an unexpectedly high incidence of marked psychological reactions, including psychosis which is associated with other conditions (such as hypothyroidism and hyperthyroidism,[20] hypoparathyroidism and hyperparathyroidism,[21] Addison's disease,[13] and diseases of the pituitary gland [22]).

---

[6] Stokes, J. H., and Beerman, H.: Psychosomatic Correlations in Allergic Conditions: A Review of Problems and Literature, Psychosom. Med. **2**: 438-458 (Oct.) 1940.

[7] Lindemann, E.: Modifications in the Course of Ulcerative Colitis in Relationship to Changes in Life Situations and Reaction Patterns, A. Res. Nerv. & Ment. Dis., Proc. (1949) **29**: 706-723, 1950.

[8] Wolfson, W. Q.; Hunt, H. D.; Cohn, C.; Robinson, W. D., and Duff, I. F.: ACTH and Colchicine in the Clinical Treatment of Acute Gouty Arthritis: Physiological Considerations and Review of Therapeutic Results in 51 Attacks, J. Michigan M. Soc. **49**: 1058-1064; 1083 (Sept.) 1950.

[9] Funkenstein, D. H.: Psychophysiologic Relationship of Asthma and Urticaria to Mental Illness, Psychosom. Med. **12**: 377-385 (Nov.-Dec.) 1950. Stokes and Beerman.[6]

[10] Frankl, V. E.: Psychadynamie und Hypokortikose, Wien. klin. Wchnschr. **61**: 735-737 (Oct. 28) 1949. Gorman, W. F., and Wortis, S. B.: Psychosis in Addison's Disease, Dis. Nerv. System **8**: 267-271 (Sept.) 1947. Hartman, F. A., and Brownell, K. A.: The Adrenal Gland, Philadelphia, Lea & Febiger, 1949. Thorn, G. W.: Diseases of the Adrenal Glands, in Cecil, R. L., and Others, Editors: A Textbook of Medicine, Ed. 7, Philadelphia, W. B. Saunders Company, 1947, pp. 1356-1373.

[11] Lemkau, P.; Tietze, C., and Cooper, M.: A Survey of Statistical Studies on the Prevalence and Incidence of Mental Disorder in Sample Populations, Pub. Health Rep. **58**: 1909-1927 (Dec. 31) 1943.

[12] Bergouignan, M., and Guérin: Les troubles mentaux dans le syndrome de Cushing, Ann. méd.-psychol. **106** (pt. 2): 520 (Nov.) 1948.

[13] Soffer, L. J.: Diseases of the Adrenals, Philadelphia, Lea & Febiger, 1946, pp. 95; 218; 219.

[14] Rimbaud, L.; Serre, H.; Passouant, P., and Brunel, D.: Maladie de Cushing et troubles psychiques, Ann. méd.-psychol. **105** (pt. 2): 459 (Nov.) 1947.

[15] Oldenberg, F.: Psychische Störungen beim Cushing-Syndrom, Schweiz. Arch. Neurol. u. Psychiat. **59**: 318-325, 1947.

[16] Huddleson, J. H., and McFarland, R. A.: The Response of Chronically Fatigued Neurotic Patients to Adrenal Cortex Therapy, Endocrinology **25**: 853-866 (Dec.) 1939.

[17] Hoff, H., and Shaby, J. A.: Suprarenal Cortical Extract in Acute Confusional States, Lancet **1**: 27-28 (Jan. 6) 1940.

[18] Sarradon, P.: Incidents et accidents possibles au cours des implants de désoxycorticostérone dans la maladie d'Addison, Semaine hôp. Paris (Supp.) **23**: 1849-1853 (Aug. 7) 1947.

[19] Murray, C. G., and Simpson, G. S.: A Case of Virilism Due to an Adrenal Cortical Hypernephroma; Recovery After Removal of the Growth, Lancet **2**: 745-749 (Oct. 8) 1927.

[20] Means, J. H.: The Thyroid and Its Diseases, Ed. 2, Philadelphia, J. B. Lippincott Company, 1948, pp. 430-432. Dunlap, H. F., and Moersch, F. P.: Psychic Manifestations Associated With Hyperthyroidism, Am. J. Psychiat. **91**: 1215-1238 (May) 1935. Conrad, A.: The Psychiatric Study of Hyperthyroid Patients, J. Nerv. & Ment. Dis. **79**: 505-529 (May); 656 (June) 1934.

Thus, it would appear that an induced hypercorticalism evokes a fundamental reaction—a stress, which mobilizes physiological as well as psychological resources. The dynamic equilibrium which results is a different level of adaptedness than that which constituted the pretreatment steady state. The capacity to adjust to this transition in turn is a function of many factors, those in the patient's present and past life as well as those in his internal and external environments. Consequently, there is a wide range of possible reactions which are reflected in the different clinical psychiatric syndromes which appear.

In the light of this potential complication to the treatment of certain diseases with corticotropin, cortisone, and possibly other hormones, it is especially necessary for the clinician to be thoroughly acquainted with all the component adaptative capacities of the patient he is treating.

102 Second Ave. S. W. (Dr. Rome).

[21] Kissin, M., and Bakst, H.: Co-Existing Myxedema and Hyperparathyroidism: Case Report, J. Clin. Endocrinol. **7**: 152-158 (Feb.) 1947. Rogers, H. M.: Parathyroid Adenoma and Hypertrophy of the Parathyroid Glands, J. A. M. A. **130**: 22-28 (Jan. 5) 1946. Shelling, D. H.: The Parathyroids in Health and in Disease, St. Louis, The C. V. Mosby Company, 1935, p. 132.

[22] Lurie, L. A.: Pituitary Disturbances in Relation to Personality, A. Res. Nerv. & Ment. Dis., Proc. (1936) **17**: 547-560, 1938.

TRANSIENT SYNOVITIS OF THE HIP JOINT IN CHILDREN

REPORT OF THIRTEEN CASES

Ernest Goodall Edwards, M.D., Savannah, Ga.

A fairly common cause of painful hips in children is the condition variously known as transitory arthritis of the hip joint, transitory coxitis, coxitis serosa seu simplex, acute transient epiphysitis, and transient synovitis.

It is now felt that the term transient synovitis most aptly describes the condition, because the pathology seems to lie within the synovial membrane of the hip joint and to be excluded from the other structures within the hip. The malady is of interest, not because it is a disabling condition, but because of the difficulty encountered in differentiating it from more serious diseases of he hip, such as tuberculosis, osteomyelitis, or Legg-Perthes' disease.

Literature on the subject is rather scarce, only a few articles being found. Belmonte,[1] reporting on the condition in 1931, stated, "It is wonderful how the functional disturbance completely disappears in several days, and after ten to twelve days, all complaints depart." Bradford and Lovett [2] postulated that the diagnosis of synovitis of the hip should not be made unless the symptoms subside within a few weeks and recovery is permanent.

Butler,[3] in 1933, reported on a series of 25 cases of conditions which he classified as "observation hips." In 19 of his cases the condition proved to be some form of transitory arthritis with complete return of function. The roentgenograms in these cases showed no abnormalities and no definite cause for the condition was found. He concluded that a transitory arthritis in the hip joint in children without roentgenographic changes is common and frequently is diagnosed wrongly as tuberculosis.

Finder,[4] in 1936, reported 22 cases and stated, "In transitory synovitis of the hip joint, the synovitis constitutes the entire disease, but in other hip joint lesions, the synovitis may merely represent the point of departure into any one of several disorders of the hip."

Miller,[5] in 1931, described a condition of the hip which was similar in many respects to transient synovitis. He reported 77 cases and designated the condition "acute transient epiphysitis." He ascribed the condition to the lodging of infectious infarcts or pyemic plugs in the epiphysis, more commonly on the metaphyseal side of the epiphyseal line but occasionally on the epiphyseal side, and to the formation of focal abscesses. Miller felt that this was secondary to a focus of infection elsewhere in the body, and in 80% of his cases the condition was associated with diseased tonsils. Furthermore, he was able to demonstrate roentgenographic changes in the neighborhood of the epiphyseal line. In this condition the duration of the disease was a few weeks to a few months. It would appear then that the difference between the two conditions is that the pathological changes actually occur in the region of the epiphyseal line in the one case, which is possibly metastatic in character, while in transient synovitis the pathology is localized to the synovial membrane, probably on the basis of a toxicity or hypersensitivity reaction to some focus of infection elsewhere in the body.

Lucas,[6] in 1948, discussed the symptoms, etiology, and differential diagnosis of transient synovitis. The etiology of the condition is obscure. A small percentage of the cases have a history of trauma. Both Butler and Finder feel that an underlying, nonspecific infection is the likelier cause. This infection may be due to an allergic hypersensitivity to a focus of infection elsewhere in the body, a low-grade infection entering the blood stream and localizing in the joint, or a metastatic infection from some other focus in the body and the actual lodging of bacteria in the synovium.

Allergic conditions, such as asthma, bronchitis, rhinitis, and hay fever, and infected foci, such as the tonsils, teeth, and middle ear, can be causative. The condition

---

From the University of Virginia Hospital.

[1] Belmonte, A. C.: Over voorbijaande, goedardige "Coxitis" (Coxitis Fugax), Nederl. tijdschr. geneesk. **75**: 5, 197, 1931.

[2] Bradford, E. H., and Lovett, R. W.: Treatment of Hip Disease, Am. J. Orthop. Surg. **9**: 354-373, 1911-1912.

[3] Butler, R. W.: Transitory Arthritis of the Hip-Joint in Childhood: An Investigation of Arthritis of the Hip in 97 Children, Brit. M. J. **1**: 951-954, 1933.

[4] Finder, J. G.: Transitory Synovitis of the Hip Joint in Childhood, J. A. M. A. **107**: 3-5 (July 4) 1936.

[5] Miller, O. L.: Acute Transient Epiphysitis of the Hip Joint, J. A. M. A. **96**: 575-579 (Feb. 21) 1931.

[6] Lucas, L. S.: Painful Hips in Children, in the American Academy of Orthopedic Surgeons Instructional Course Lectures, Ann Arbor, Mich., J. W. Edwards, 1948, vol. 5, pp. 144-152.

has been reported as a complication of such diseases as measles, influenza, typhoid, pneumonia, and scarlet fever.

It appears to affect primarily children below 10 years of age. Finder reports 5.4 years as the average age in his cases. Boys and girls appear to be affected in about the same ratio, though Butler found that boys predominate over girls in the ratio of 17:5. No definite racial predisposition has been noted, though I have seen few cases among Negroes.

The onset of the condition appears to be insidious in about as many instances as it is acute. Symptoms usually last one to a few days, though in some cases they may be present for several weeks.

The symptoms most often encountered are pain and limping. The pain may be mild or so severe that the child refuses to bear any weight on the affected extremity. Also, the pain is often present in the thigh or knee and, rarely, in the lower leg, radiating from the hip. The degree of limping may range from mild to severe. Clinically there is demonstrable muscle spasm of all groups about the hip. Palpation anteriorly over the head of the femur will elicit tenderness. The child holds the leg in the position of comfort or flexion and adduction. All ranges of motion are resisted and limited, particularly abduction and internal or external rotation. Extension of the leg is very painful. Trendelenburg's sign frequently is present. A low-grade temperature is often present, varying from 99 to 101 F. Rarely, the temperature may go as high as 103 F.

The laboratory data are often of little or no help. The white blood cell count is usually normal, though occasionally it may be slightly elevated, to about 12,000. Generally, the differential white blood cell count is not remarkable, but a slight shift of the Schilling count to the left in elevated white counts is seen as expected. The blood sedimentation rate is usually elevated, though as a rule the elevation is not extreme. The Wassermann reaction is negative, as well as the reaction to the tuberculin skin test; these are important in ruling out more serious diseases.

There has been no opportunity to make a pathological study of tissue sections of the synovial membrane, because of the usually rapid subsidence of the symptoms with conservative therapy. I have aspirated these joints on two occasions. The fluid was xanthochromic and seemed to clot readily. No bacteria were present in stains, and the blood chemistry was normal, including sugar values. Chloride and nonprotein nitrogen levels appeared to be within normal limits, that is, about the same as in the blood plasma.

The condition is important, as stated previously, because of the difficulty often encountered in ruling out more serious diseases of the hip. Tuberculosis must be differentiated. This can often be done by a previous history of exposure to the disease, a positive tuberculin skin reaction, and, sooner or later, the inevitable roentgenographic changes in the bone. If doubt exists, aspiration of the joint and testing by guinea pig inoculation may be mandatory.

Osteomyelitis, before bone changes have occurred, may present an obstacle. However, the acute joint swelling, the elevated white blood cell count, and changes in the bone demonstrated by serial roentgenograms later, as well as the more acute general condition of the patient and the persistence of increasingly severe symptoms, all suffice for diagnosis.

Pyogenic arthritis or a septic joint may require aspiration. The presence of purulent material and the demonstration of bacteria by stains are conclusive evidence.

Legg-Perthes' disease is another important condition which must be excluded and which may be misleading in the early stages. As a rule, the more insidious the onset, the longer the duration of symptoms; the tendency for the pain and limp to subside rather than to recur are all important differences between this disease and transient synovitis. X-ray evidence is diagnostic when it occurs.

The acute transient epiphysitis described by Miller may be very similar, but the usually longer duration of the disease, the definite association with diseased tonsils (proved by the fact that Miller reported the patients in his cases recovered promptly when the diseased tonsils were removed), and the demonstration of focal abscesses or abscess tracts in the region of the femoral epiphysis are all differentiating. Butler reports one case of an acute, low-lying retrocecal appendix which caused fixation of the hip joint by psoas muscle spasm and confused the diagnosis.

A series of 13 cases seen at the University of Virginia Hospital from 1943 to 1950 is reported here. There were undoubtedly more cases, but these cases were picked because it was felt that they represented instances of true transient epiphysitis of the hip. No other pathology was demonstrated in the hip joint at any time, and cases in which destructive joint changes were demonstrated later by roentgenograms were discarded.

These patients ranged in age from 4 to 10 years, with an average of 5.4 years. There were seven boys and six girls in the series. Thus these cases are comparable to Finder's as far as age and sex are concerned.

The duration of symptoms ranged from one day to as long as three weeks (one case). As a rule the duration was one to three days. The Wassermann blood reaction was negative in two cases. There was no family history of syphilis in any of the cases. The results of the tuberculin skin test in standard dilutions were negative in nine cases.

Of significance in these cases and leading to the supposition that the condition is due to an allergic hypersensitivity of the synovial membrane to an infection elsewhere in the body rather than to a purely metastatic process is a history of allergy in four cases. There were two cases of asthma, one case of bronchitis, and one case of hay fever. In addition, in five cases there was a history of repeated upper respiratory infections, including frequent colds, sore throat, nasal discharge, and, in one case a history of otitis media, possibly all on an allergic basis. In eight cases hypertrophied and infected tonsils were found. In one case the only demonstrable focus of infection was a partially healed furuncle on the thigh. In one case there was a presumptive diagnosis of typhoid with a positive blood Widal reaction of 1:40 and 1:80. Stool and bile cultures were negative. It was felt, however, that this represented a transient synovitis as a complication of typhoid, because of the prompt respo the joint symptoms to conservative therapy, the absence of roentgenographic changes, and the fact that the patient has remained well.

The average white blood cell count was 7,000. The blood sedimentation rate (Westergren) was reported in one case as 14 mm. per hour. The average temperature was 99.9 F. The highest temperature was 103 F.

The treatment consisted of simple conservative measures. Eight of the patients were admitted to the hospital and put on complete bed rest with 3 to 5 lb. (1.3 to 2.3 kg.) of straight leg traction on the affected extremity. The patients were given oral sedatives. A few of the patients were given intramuscular injections of penicillin, and several were given sulfonamides orally. Five of the patients were sent home on complete bed rest, as a rule without traction, but warm compresses were applied to the hip. All patients recovered from the symptoms, generally within one week. Symptoms were present in one case for two to three weeks. Two patients with a history of allergy were given an antihistaminic drug, tripelennamine (pyribenzamine®) hydrochloride in 50 mg. doses three times a day. These two patients recovered dramatically in one day and remained well.

REPORT OF CASES

Case 1.—J. J. H., a 9-year-old white boy, had rather sudden onset of pain in the left hip and inside of the thigh the previous day. He stated that he had fallen and bruised his left knee three weeks previously but had been asymptomatic thereafter. He had had a head cold with a slight nasal discharge and headache for one week. The patient was admitted to the hospital, and physical examination revealed hot flushed skin. The temperature was 103 F. The throat and pharynx were infected. Palpation over the ead of the left femur and about the hip joint generally was [illegible]. Moderate muscle spasm was present, and all ranges of [illegible] were painful. Internal and external rotation as well as [illegible] were especially painful.

[illegible] laboratory findings included a blood hemoglobin value [illegible] 12 gm. per 100 cc. The white blood cell count was 13,800, with a moderate shift to the left in the Schilling count. The reactions to the tuberculin and Schick tests were negative. The urine was normal. X-rays of the hip showed no abnormalities.

The treatment consisted of symptomatic measures, bed rest, and 5 lb. (2.3 kg.) of straight leg traction. The patient was also given oral doses of sulfadiazine. The joint symptoms rapidly subsided, and in one week the patient was asymptomatic and was discharged from the hospital. There have been no recurrences.

Case 2.—Mc B., a 4½-year-old white boy, began to have pain in the left hip one day previously. The child became restless and refused to bear weight on the leg. A sore throat had been present for 12 days.

On admission to the hospital, the temperature was 99.2 F. Physical examination revealed enlarged, cryptic tonsils. Marked muscle spasm was present about the left hip, and tenderness was elicited on palpation over the hip anteriorly. Internal rotation, external rotation, and abduction were limited and painful.

The laboratory findings revealed a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 7,200, with a normal differential count. The results of urinalysis were normal. X-rays of the hip revealed no pathological changes.

The treatment consisted of bed rest with 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. He was given 25,000 units of penicillin intramuscularly every three hours for 48 hours. In two days all symptoms had subsided, and the hip joint was freely movable. The patient was discharged on the fourth hospital day and has had no recurrences.

Case 3.—J. S. L., a 4-year-old white boy, had pain in the right hip three days previously. Thereafter he refused to bear weight on the extremity; when he did walk, he limped badly. The patient had had several attacks of tonsillitis, but none during the past several months.

On his admission to the hospital, the temperature was 99.2 F. Physical examination revealed a marked limp with pain in the right leg. Moderate muscle spasm was present about the hip. Internal rotation was limited and painful. The laboratory findings included a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 7,200, with a normal differential count. The urine was normal. Tuberculin skin test gave a negative reaction. Roentgenograms of the hip were negative.

The treatment included bed rest with 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. Symptomatic treatment was given, and the patient was also given oral doses of sulfadiazine. On the third hospital day all joint symptoms had subsided, and a free range of motion was present in the hip. He was discharged on the sixth hospital day and has had no recurrences.

Case 4.—D. D. T., a 5-year-old white girl, was seen in the pediatric outpatient department with a history of having fallen on her right hip five days before. She had no symptoms until one day later, when she complained of pain in the anterior aspect of the right thigh. One day later she refused to use the right leg; she was admitted to the hospital five days after the fall. The temperature was 99 F, and physical examination revealed the right hip was held in flexion and slight internal rotation. Tenderness was elicited on palpation anteriorly over the hip. All ranges of motion were resisted and painful. A "healed furuncle" was present on the lower part of the right thigh.

The laboratory findings revealed a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 5,400, with a normal differential count. The urine was normal. The Wassermann reaction and the reaction to the tuberculin skin test were negative. X-rays of the hip showed no abnormalities. Treatment included palliative measures, bed rest, and 5 lb. (2.3 kg.) of straight leg traction on the extremity. Traction was continued for two weeks, at the end of which the patient was symptom-free, and the hip was freely movable. She was discharged from the hospital and has had no recurrences.

Case 5.—M. F. F., a 5-year-old white boy, had had a limp and pain in the right hip "several weeks" previously. There was no history of trauma. There was some doubt as to the time of onset of the symptoms, but it was presumably about three weeks. He continued to have hip symptoms and was admitted to the hospital. On admission the temperature was 99.8 F. Physical examination revealed large, diseased tonsils. The patient limped rather markedly on the right leg. Abduction and external rotation were limited and painful. The laboratory data included a blood hemoglobin value of 11.5 gm. and a white blood cell count of 6,400, with a normal differential count. The urinalysis disclosed no abnormalities. The result of the tuberculin skin test was negative. Roentgenograms showed a normal hip.

Treatment included bed rest, palliative measures, and 8 lb. (3.6 kg.) straight leg traction on the affected extremity. The joint symptoms subsided, and on the seventh hospital day the patient was symptom-free and was discharged. He has remained well.

Case 6.—P. W., a 5-year-old white girl, complained of pain in the right hip and upper part of the thigh, along with "stiffness" of the hip, for 32 hours. The pain radiated down the inside of the leg to the knee. The child had been in good health and the past history was noncontributory.

On her admission to the hospital, the temperature was 99.3 F. Physical examination revealed moderate muscle spasm about the right hip, which was held in a flexed position and in slight internal rotation. Palpation anteriorly over the hip elicited tenderness. Extension as well as internal and external rotation were limited and painful. The laboratory findings included a blood hemoglobin value of 11.5 gm. per 100 cc. The white blood cell count was 6,600, with a normal differential count. The urine was normal. X-rays of the hip revealed no pathology.

The patient was placed on symptomatic therapy and bed rest and 3 lb. (2.3 kg.) of straight leg traction was applied to the extremity. The symptoms readily subsided, and the patient was discharged on the fourth hospital day. She has had no recurrences.

Case 7.—N. A. P., a 10-year-old white girl, gave a history of a fall five weeks previously. She had no hip symptoms thereafter, but three weeks before admission to the hospital she again fell on the ground; one day later pain and disability developed in the left hip. She continued to be active but limped rather markedly on the left leg. The past history was noncontributory. The patient was admitted to the hospital with a temperature of 100.8 F. Physical examination revealed limitation of abduction, adduction, and both internal and external rotation of the left hip. No local tenderness was elicited over the hip.

The laboratory data revealed a blood hemoglobin value of 13 gm. per 100 cc. The white blood cell count was 4,600. A slight shift to the right with a relative increase in the lymphocytic count was noted. The urine was normal. The reaction to the tuberculin skin test was negative. X-rays of the hip revealed no pathology.

The treatment included bed rest, symptomatic therapy, and 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. The hip joint symptoms subsided, and on the 15th hospital day she was asymptomatic. The hip joint was freely movable and not painful at this time. Traction was continued, however, and the patient was discharged on the 25th hospital day. She has had no recurrences.

Case 8.—R. S., a 5-year-old white girl, had pain in the left hip two days previously. The pain radiated down the anterior thigh to the knee. The child began to limp on the left leg. She had a history of bronchitis and frequent colds in the past. There was no history of trauma. Hot compresses had been applied to the hip at home with some benefit. The child was not admitted to the hospital. Physical examination revealed the left hip was held in marked flexion and slight internal rotation. Pronounced muscle spasm was present about the hip. Abduction as well as internal and external rotation were limited and painful. Roentgenograms of the hip showed no abnormalities.

The child was sent home on complete bed rest, and the mother was instructed to continue the hot fomentations to the hip. In addition, the child was given 50 mg. of tripelennamine hydrochloride three times a day for two days because of the previous allergy. The patient showed dramatic improvement and in one day was completely asymptomatic and ambulatory. No further hip joint symptoms have occurred.

Case 9.—G. H. B., a 5-year-old white boy, began to have pain in the right hip and anterior aspect of the thigh two days previously. The patient also limped noticeably on the right leg. The child had a history of allergy, including hay fever, "sinus trouble," and frequent colds. At this time he had had a cold for one week. The patient was not admitted to the hospital. Physical examination revealed tenderness on palpation anteriorly over the right hip. There was marked limitation of internal and external rotation of the hip, and these movements produced pain. X-rays of the hip revealed no pathological changes. The patient was sent home on complete bed rest, and hot fomentations were applied to the hip. The child was also given oral doses of sulfonamides. All of the hip joint symptoms subsided in two or three days, and the patient became ambulatory. The patient has remained symptom-free.

Case 10.—L. H., a 5-year-old white girl, was seen in the pediatric outpatient department complaining of a limp and pain in the right hip of several days' duration. There was a history of asthma, and she had had repeated upper respiratory infections and sore throat in the past. The patient was not admitted to the hospital. Physical examination revealed moderate muscle spasm generally about the right hip. Internal and external rotation were limited and painful. X-rays of the hip revealed no pathology. The patient was sent home on constant bed rest and was instructed to apply hot fomentations to the hip. These measures were carried out, and in five days the joint was asymptomatic and the child ambulatory.

Two years later this child had a similar history and condition in the left hip. X-rays of both hips again revealed no pathological changes. She was sent home and given the same treatment as she had received for the right hip; again her symptoms subsided within a few days. She has had no further recurrences.

Case 11.—T. F., a 5-year-old white boy, had fallen on his buttocks five days previously. The child was asymptomatic until four days later, when he began to have a limp and pain in the right hip. The symptoms did not appear to be acute. One day after the onset of the symptoms the patient was seen but not admitted to the hospital. Physical examination revealed enlarged, chronically infected tonsils. There was limitation of external rotation, which was painful, in the right hip. X-rays of the hip did not reveal any abnormalities.

This patient was sent home on strict bed rest, and hot fomentations were applied to the hip. All symptoms were absent in two days, and the child became ambulatory. There have been no recurrences.

Case 12.—E. M. T., a 5-year-old white girl, complained of pain in the right hip of one day's duration. According to the mother, the child awoke in the morning complaining of the painful hip. The pain radiated down the anterior aspect of the thigh to the knee. The child had a pronounced limp on the right leg and weight-bearing was painful. There was no history of allergy or other infectious foci. The patient was not admitted to the hospital.

Physical examination revealed moderate muscle spasm about the right hip, which was held in a position of flexion and slight internal rotation. Tenderness was present anteriorly over the hip joint on palpation. Abduction and internal and external rotation were limited and painful. The hip appeared to be normal on x-ray examination.

The patient was sent home on continuous bed rest, and warm compresses were applied to the hip. Also, on the theory that there was a hypersensitivity reaction in the hip joint, even though no positive history of allergy was obtained, the child was given 50 mg. of tripelennamine hydrochloride twice a day. She showed dramatic response to the treatment and was completely asymptomatic and ambulatory in one day. She has had no recurrences.

Case 13.—W. G. S., a 6-year-old white boy, complained of pain in the right hip for five days. He also had a marked limp on the right leg, and the pain was aggravated by weight-bearing. There was no history of trauma. The symptoms steadily increased in severity.

The patient was admitted to the hospital. The temperature was 99.8 F; physical examination disclosed that the tonsils were hypertrophied and inflamed. There was tenderness to palpation both anteriorly and posteriorly about the right hip. Abduction, flexion, and external rotation of the hip were limited and painful. The blood hemoglobin value was 90% (Sahli-Hellige). The white blood cell count was 14,000. The differential white blood count showed a moderate shift to the left, with an increase in the "stab" forms. The results of urinalysis were normal. Reaction to the tuberculin skin test was negative. X-rays of the hip joint showed no abnormalities.

Treatment consisted of continuous bed rest and 5 lb. (2.3 kg.) of straight leg traction applied to the affected extremity. A tonsillectomy was done after the first week, after which the daily temperature readings reached as high as 103 F. Typhoid was suspected. Stool cultures as well as bile cultures were negative for typhoid bacilli. Blood cultures were negative. Positive reactions to the Widal test for typhoid in dilutions of 1:40 and 1:80 were obtained, and a presumptive diagnosis of typhoid was made. Thereafter the patient recovered rapidly, and the temperature was normal in two weeks. The joint symptoms were absent after two weeks in the hospital. Repeated roentgenograms of the hip disclosed no pathological changes. The child was discharged from the hospital in three weeks with a spica bandage on the hip as a precautionary measure. Follow-up x-ray examinations revealed no hip joint changes, and the patient had no recurrences. In spite of a positive blood Widal reaction, it was felt that this was an instance of true transient synovitis of the hip joint which was possibly a complication of typhoid.

SUMMARY AND CONCLUSIONS

Transient synovitis of the hip joint is a common condition in children under 10 years of age. The literature pertaining to the subject is reviewed. The etiology of the condition is discussed, and it is felt most likely that it represents an allergic hypersensitivity or toxic reaction to some other focus of infection in the body. It could possibly be caused by a blood-borne infection lodging in the synovium or a metastatic spread from another focus of infection in the body. The average age of the patients is 5.4 years. Boys and girls appear to be affected in equal number. The main symptoms are pain and limp. Muscle spasm and limitation of motion, particularly internal and external rotation, as well as abduction, are the cardinal clinical signs. The temperature is slightly elevated. Positive laboratory findings include a slightly elevated white blood cell count, which may, however, be normal. The blood sedimentation rate is as a rule moderately elevated. Negative Wassermann and tuberculin skin reactions are important. Roentgenograms of the hip show no abnormalities. The absence of bacteria in the synovial fluid is important. The differential diagnosis excluding especially such conditions as tuberculosis, osteomyelitis, septic arthritis, and Legg-Perthes' disease, as well as the condition described by Miller as acute transient epiphysitis, is discussed. In eight of the cases presented, the patients had enlarged, infected tonsils. Four of them had a history of allergy, including asthma, hay fever, sinusitis, and bronchitis. In addition, five had histories of repeated upper respiratory tract infections. In one case there was a positive blood reaction to the Widal test for typhoid in dilutions of 1:40 and 1:80. The treatment, consisting of bed rest, symptomatic measures for relief, and traction on the affected extremity, is outlined. Also, two cases are reported in which an antihistamine drug, tripelennamine hydrochloride, was tried with dramatic results. It is felt that this lends support to the theory that the condition has an allergic or hypersensitivity basis.

3½ E. Gordon St.

PHYSICAL EXAMINATION OF THE CEREBRAL PALSIED CHILD

Russell V. Fuldner, M.D., New Haven, Conn.

Within recent years certain medical and lay groups have shown an active increase of interest in the varied problems of children with cerebral palsy. The factors underlying this renewed attention have been outlined elsewhere.[1] According to the Medical News columns of The Journal at least 16 new cerebral palsy centers of permanent character have been established in this country during the past four years. For the most part these facilities are designed for case-finding, diagnosis, and treatment; a few of them have been set up to meet the unusual educational needs of cerebral palsied children. Some states have appropriated special funds to deal with erebral palsy, and require physicians to report cases to he state health department. A national parents' society,[2] with objectives in cerebral palsy comparable to those of the National Foundation in the field of infantile paralysis, was founded in 1949. All of this renewed stress on a positive approach to cerebral palsy has highlighted the desirability of early diagnosis and prompt and adequate treatment. According to Temple Fay,[3]

> Accurate medical screening with diagnostic classification as well as planning and prognosis are first essentials in any long-range educational or training effort (for cerebral palsy). . . . One of the first objectives that the medical profession has to face is the problem of diagnostic screening.

In dealing with cerebral palsied children one must constantly reckon with the emotional involvement of parents; the dynamic character of parental organizations is a reflection of a consuming interest in the welfare of these children. The members of such organizations usually possess a considerable fund of information about cerebral palsy in general. Unjustly or not, parents sometimes consider medical practitioners insufficiently informed about the condition and are especially disturbed by delays in diagnosis. Although even the most experienced examiner may occasionally err in the diagnostic evaluation of the cerebral palsied child, at least a presumptive identification of the condition can be made by any interested practitioner within the first six months of life—certainly by the end of the first year. Ordinarily the physician in general practice, because of his early contact with these infants, will first be in position to suspect the diagnosis. The general practitioner should assume a leading role in diagnosing cerebral palsy and in the all-important job of parent counseling.

OBJECTIVES OF EXAMINATION

It is the purpose of this article to outline methods, none of them essentially original, which have been found helpful in evaluating cerebral palsy in infants and children. No reference will be made to accessory instrumental technics, such as pneumo- and electro-encephalography, which may occasionally be utilized in diagnosis, or to the value of graphic records, such as moving pictures. Stress has been laid on reducing the multitude of possible clinical tests to a concise form. The initial examination of a cerebral palsied child is usually but one of a series and often a point of departure for special evaluations in categories such as sight, hearing, and cortical functions. In many cases the examining physician will need help from one or more of his colleagues in the specialties or from those specially versed in speech, perceptual, and behavior disorders.[4] While the importance of consultations can scarcely be overstressed, it is essential that at least one member of the team assume responsibility for correlating this data with the broad evaluation outlined in the following paragraphs. The aim is to achieve a working diagnostic and prognostic concept which takes into account the child as a whole, both as a patient and as a burgeoning personality.

CASE MATERIAL

A total of 406 children, referred with a presumptive diagnosis of cerebral palsy[5] and ranging in age from 4 months to 21 years, have been personally examined by me in the course of the last four years. The purpose of the examinations was essentially pragmatic—to assess and record the child's motor and other pertinent disabilities as accurately as possible, having in mind rehabilitation requirements, the prospects of the patient's response to treatment, and the eventual prognosis in terms of social as well as physical adaptations. Of the total 406 children, 291 were diagnosed as having cerebral palsy, with or without convulsions and/or mental defect; 83 as mental or behavior problems, without evidence of cerebral palsy and 27 as falling in categories other than these two—e. g., epilepsy, hearing or speech defect, progressive muscular dystrophy. Among the remaining five children a satisfactory diagnosis could not be established.

---

[1] Fuldner, R. V., and Spekter, L.: Cerebral Palsy in Connecticut Today, Connecticut S. M. J. 13: 12 (Jan.) 1949.

[2] The United Cerebral Palsy Associations. The National Society for Crippled Children and Adults also devotes much of its work to the field of cerebral palsy.

[3] Fay, T.: Cerebral Palsy: Medical Considerations and Classification, Am. J. Psychiat. 107: 180 (Sept.) 1950.

[4] Strauss, A. A., and Lehtinen, L. E.: Psychopathology and Education of the Brain-Injured Child, New York, Grune & Stratton, 1947.

[5] The case material has been drawn principally from the Cerebral Palsy Clinic of the Newington Home and Hospital for Crippled Children, Newington, Conn., and from a state-wide survey of cerebral palsy conducted by the Connecticut State Department of Health in 1950.

DEFINITION AND CLASSIFICATION

While definitions of cerebral palsy vary, most agree in describing the condition as essentially a motor disturbance arising from injury or disease of the brain. The symptoms of cerebral palsy, in the usual connotation of the term, become evident in infancy or childhood. By common consent, if not logically, the acute phase of infections is excluded, as are also progressive disorders, epilepsy, and behavior disturbances. It is apparent that such a definition possesses arbitrary limits. A child with arrested hydrocephalus may be included, one with progressive hydrocephalus not, the inclusion or exclusion of a borderline case resting on the examiner's decision. Occasionally this assumes importance in relation to a child's eligibility for treatment or other services. Many patients present varying combinations of cerebral palsy and mental defect, or cerebral palsy and convulsive symptoms; here the horns of the diagnostic dilemma may be escaped by listing two or more diagnoses. In lay circles there is a tendency to use cerebral palsy as an euphemism for mental defect, and the examiner may at times be pressed to render a diagnosis of cerebral palsy in a defective child with motor immaturities or stereotypies (see Case 3). The categories of cerebral palsy are defined and described in the writings of Phelps [6] and Perlstein.[7]

HISTORY TAKING

The conduct of the examination will be described only briefly, since the accompanying diagnostic tables (Tables 2 and 4) are meant to be self-explaining.[8] As a preliminary to the physical examination, it is advisable to become thoroughly acquainted with the patient's history. In addition to the usual pediatric history, a detailed record should be obtained of the patient's birth (Table 1). These data are of especial importance in conditions such as erythroblastosis, anomalies of the central nervous system, and birth traumas. Similarly, the patient's postnatal or developmental history should be compared with the normal chronology of maturation (Table 2); if desired, an outline form similar to Table 1 can be made up for this purpose from the data supplied in Table 2. While prepared forms conserve time and make convenient records, in their use one must guard against adopting an unthinking routine. It need scarcely be said that departures from the norms in birth and development may point to a variety of disturbances other than cerebral palsy. Special studies are available [9] which help to explain the relationship of cerebral palsy to factors brought to light by the history.

CONDUCT OF EXAMINATION

The eliciting and interpretation of physical signs in these children is often of such interest and complexity that the examiner may lose sight of the wood for the trees. Initially at least, a conspectus of the patient's abilities and disabilities is of more practical importance than an attempt to establish the localization of the lesion. This concept forms the basis of the examination technic.

Since the physical examination is based so largely on motor performance, it is essential that the patient "perform" to the best of his ability and with minimal constraint. Usually it is not difficult to enlist the child's cooperation, provided that he is not defective mentally and a personality disturbance is not present. With older children the examination may conveniently start in the waiting room, the patient being observed as he arises from the sitting position, walks to the examining room, and undresses. In addition to performance, the examination of the extremities should emphasize the testing of muscle

TABLE 1.—*Form for Recording Details of Birth History, Including Pregnancy and Neonatal Period*

Name..................................Age........Date.........

Family	Neonatal Status
Father's age.......Rh type............	Birth weight.......Rh type............
Mother's age.......Rh type............	Birth weight reestablished:............
Miscarriages............................	Cry, resuscitation......................
	Head bruises............................
Siblings (age, status)	Respiration............................
1....................................	Pallor, cyanosis........................
2....................................	Apathy, stupor..........................
3....................................	Fever..................................
4....................................	Restlessness, twitching.................
5....................................	Convulsions, rigidity...................
6....................................	Head carriage...........................
Twinning............................	Strabismus, nystagmus...................
Familial disorders..................	Sucking, feeding........................
	Vomiting...............................
Pregnancy	
Duration............................	Jaundice...............................
Illnesses, accidents................	Incubator, oxygen.......................
Labor	
Duration............................	Transfusions...........................
Presentation........................	Spinal tap.............................
Surgery, instruments................	Left hospital at age....................
Analgesics, anesthetics.............	Physicians statement in hospital......
Maternal status postpartum..........	Additional.............................
Complications.......................	

Summary

....

....

....

....

....

---

6. Phelps, W. M.: Description and Differentiation of Types of Cerebral Palsy, Nerv. Child 8: 107 (April) 1949.

7. Perlstein, M. A., and McPeak, W.: The Problem of Cerebral Palsy Today, Chicago, The National Society for Crippled Children, 1947.

8. (*a*) Gesell, A., and Amatruda, C. S.: Developmental Diagnosis, Normal and Abnormal Child Development, Clinical Methods and Pediatric Applications, ed. 2, New York, Paul B. Hoeber, Inc., 1947. (*b*) Dunham, E. C.: Appraisal of the Newborn Infant, Bureau Publication 242, United States Department of Labor, Children's Bureau, 1938. (*c*) Knop, C.: Dynamics of Newly Born Babies, J. Pediat. **29**: 721 (Dec.) 1946. (*d*) Ford, F. R.: Diseases of the Nervous System in Infancy, Childhood and Adolescence, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1945. (*e*) Sachs, B., and Hausman, L.: Nervous and Mental Disorders from Birth Through Adolescence, New York, Paul B. Hoeber, Inc., 1926. (*f*) Pohl, J. F.: Cerebral Palsy, St. Paul, The Bruce Publishing Company, 1950. (*g*) Aldrich, C. A., and Norval, M. A.: Developmental Graph for First Year of Life, J. Pediat. **29**: 304 (Sept.) 1946.

9. Evans, P. R.: Antecedents of Infantile Cerebral Palsy, Arch. Dis. Childhood **23**: 213 (Dec.) 1948. Yannet, H.: Etiology of Congenital
bral Palsy: Statistical and Clinical Study, J. Pediat. **24**: 38 (Jar

TABLE 4.—*Key for Use of Worksheet (Table 3)*

Name..Age.........................Date...................

Appearance

Head
  Position, carriage, size, shape; involuntary movements; fontanels
Facies
  Expression, grimacing, overflow; palsy
Eyes
  Pupillary reflexes, fixation, extraocular movements, strabismus, nystagmus, searching; fundi
Attention
  Degree and duration of interest in surroundings, playthings, pictures
Responses
  As compared with norms for age (see Table 2)
Behavior
  Adaptation to surroundings; friendliness, listlessness, tantrums, restlessness, stereotyped actions
Intelligence
  Curiosity, interest, awareness, responsiveness

Special Functions

Sight
  Blink reflex; response to light; following, reaching
Hearing
  Voice, noise, whistle, tuning forks
Vocalization
  Phonation, enunciation, verbalization
Tongue; swallowing
  Voluntary and involuntary movements; salivation, chewing
Sphincters
  Control of bladder, rectum; diapers
Memory
  Siblings' names; details of trip to clinic; home activities; radio and TV programs
Cortical sensory
  Stereognosis; agnosia, aphasia, apraxia

Neck and Trunk

Breathing
  Chest-abdomen coordination
Involuntary movements
  Tic, dystonia, athetosis, tremor, ataxia
Neck carriage
  Droop, balance, torticollis; neck-limb automatism
Sitting (held; free)
  Balance
Kneeling (held; free)
  Balance
Standing (held; free)
  Balance, width of base

Supports
  Braces, crutches, canes

Progression

Kicking
  Leg alternation; flexor-extensor coordination
Crawling and Creeping
  Leg-arm alternation; strength; head carriage
Gait (held; free)
  Sense of progression and leg alternation; strength, balance, sway; trunk carriage; associated arm movements; rotation, scissoring; steppage; hip and knee position; ankle-foot carriage; involuntary movements

Running
  Leg-arm coordination; carriage of legs and arms
Ataxia
  Romberg; unsteadiness in gait

Reflexes (Infantile)

Tonic neck
Inversion
Moro
Sucking
Righting
Otolith
Creeping
Landau
Knop
  (See text for comments on reflexes)

Reflexes (Trunk)

Costal
Abdominal
Cremasteric

Extremities

Carriage
  Position of shoulder, wrist, elbow, fingers, thumb
Involuntary movements
  Overflow, athetosis, tremor, ballismus, ataxia, stereotypy
Strength
  Voluntary power in chief joint actions; muscle atrophy
Tone
  Biceps, triceps; flexors, extensors, rotators of wrist; flexors, extensors of fingers (normal, spastic, hypotonic, flaccid, rigid)
Contractures
  Shoulder, elbow, forearm, wrist, fingers, thumb
Reaching
  Speed, accuracy, involuntary movements
Grasp and pinch
  Strength, control, effectiveness; position of wrist, thumb; overgrasp; release
Dominance
  Right or left hand

Reflexes
  Biceps
  Biceps stretch
  Triceps
  Triceps stretch
  Radial
  Grasp
  Rebound
  Others
    Hoffmann, Leri, Mayer

Lower Extremities

Carriage
  Position of hip, knee, ankle, foot
Involuntary movements
  Overflow, athetosis, tremor, ataxia
Strength
  Voluntary power in chief joint actions; muscle atrophy
Tone
  Gluteals; flexors, adductors of hip; flexors, extensors of knee, ankle (normal, spastic, hypotonic, flaccid, rigid)
Contractures
  Hip, knee, ankle, foot

Reflexes
  Adductor stretch
  Quadriceps
  Quadriceps stretch
  Hamstring stretch
  Tendo achillis
  Tendo achillis stretch
  Tendo achillis clonus
  Plantar
  Crossed extension
  Rebound
  Others
    Gonda, Rossolimo, Oppenheim, Marie-Foix

Additional Findings

Including results of previous surgery; fit and effectiveness of braces; synkinetic movements

....

....

Summary of Physical Examination

....

....

Provisional Diagnosis

....

....

quently even the well-trained psychologist expresses doubt as to the validity of his findings in children with sensory or motor handicaps.[11] For the purpose of this initial examination a child's intelligence may be gauged in terms of his curiosity, interest, awareness, responsiveness, and memory. If these qualities are present, some inkling of them breaks through even the most devastating handicap,[12] and a cursory appreciation can scarcely be avoided in the course of the examination. Later the patient's response to treatment and his progress between examinations will provide additional information. With these children it is safest to hold any opinion of intelligence only tentatively, and, except in the most flagrant instances of mental defect, a child is never denied treatment on the basis of a single intelligence evaluation from any source.

REPORT OF CASES

The following case abstracts represent common diagnostic problems and errors. The history and physical examination have been reduced to the briefest possible terms and normal findings usually omitted. Fewer diagnostic errors and delays would have occurred if the procedure outlined previously had always been followed in detail.

Case 1.—R. H., a boy, 2 years, did not sit up. His birth weight was 7¼ lb. (3,290 gm.). No neonatal abnormalities or seizures were recalled. The mother became concerned when the child was 9 months and failed to sit. A diagnostic work-up, including a pneumoencephalogram, was performed when the child was 1 year. A large porencephalic cyst was disclosed in the left temporal region, and the mother was advised to place the child in an institution for retarded children. At examination the child lay supine on the table, made no overt responses, and failed to reach. He apparently saw and heard. He could not sit or hold up his head. There was no vocalization and little spontaneous movement of the arms or legs. No motor defect was discovered in the extremities except spasticity of the right arm. The impression was—"There is little doubt that significant mental handicap is present. The patient is to be placed on a list for a state institution for the feeble-minded."

At four years the patient sat up with support; his head drooped. He manipulated playthings and tried to use his left hand for feeding. He understood very well and said a few words. He was fairly well toilet-trained. At the examination the patient could sit up when strongly supported, but with a marked tendency for the head and trunk to slump. He smiled to appropriate stimuli and correctly indicated objects in the room and pictures in the book. He tried to follow simple commands. His speech was very labored, but he answered questions correctly by giving his own name and that of his sister. The muscle tone and reflexes were not increased. Athetosis was evident with the attempted use of the hands and also in the lower extremities when the patient was placed on his feet. His balance was poor. Results from the psychometric examination (revised Stanford-Binet Form L) were that "although the patient would have to be classified numerically as falling in the high-moron category, it was quite evident that this was in a large degree due to his physical handicaps and that the child was probably of normal intelligence." The impression was—"There is diffuse athetosis, but the child appears to fall within normal mental limits.

Case 2.—J. DeL., a boy, 2 years, did not hold his head up. The history revealed normal gestation, prolonged instrumental delivery, and a birth weight of 7 lb. (3,180 gm.). The infant was cyanotic and "cold" and in the incubator 30 days. His first year was not remarkable except for a failure to "relax" and to sit unsupported. He never crawled but lay on his back and pushed along. He began assisted walking at 1 year but could not walk alone. The patient understood simple commands like "stop," did not talk but seemed to try. He did not help with his feeding or dressing but played with blocks and tried to turn pages of books. He had no toilet training. Examination revealed a well-nourished child apparently with good eyesight and hearing. The patient preferred to lie supine with his arms flexed on the table alongside his head. He made no involuntary motions in this position. He was weak in holding his head and sitting up. There was no increase in muscle tone and no reflex abnormalities. The patient took a few steps supported and "seemed to display an infantile weakness of gait rather than a definite motor abnormality." He was slow in picking a block from the box and did not play with it. He did not reach for keys, but showed some interest in a picture book; he did not turn the pages. The impression was—"The patient appears to have developmental retardation, probably on the basis of mental defect rather than significant motor involvement; he will require more study, however."

At 2½ years the mother had been following the prescribed exercises daily and thought the child showed improvement. He held his head up in the prone position, used his legs in crawling, but did not seem to get proper motions from his arms. He could roll from the prone to supine position and back again. Glossolalia was constant, but the patient said a few understandable monosyllables. He could point to his eyes and ears on request and wave bye. At examination the child was responsive, smiling, and inquisitive. He was constantly thrashing his legs (not arms) in the supine position. There was no definite increase in muscle tone. He sat with fair balance and tended to let his head droop. In reaching he kept his fingers and thumb in extension; there was no opposition. He walked as before. The impression was—"The patient has considerably better intelligence than previously implied and perhaps proximal athetosis of the extremities."

At 3 years the patient liked the standing table and used it for an hour at a time. He was interested in playthings and spoke a few words. He sat on the floor alone. There had been no progress in self-feeding or toilet training. At examination the patient sat steadily, but with the head slumped, and clambered to a supported kneeling position with effort. He held his head up well in the prone position and could make a few crawling movements. His arms wavered in reaching and his fingers showed hyperextension in attempted grasp. The patient walked with support on a wide base, unsteadily. Bilateral Babinski reflex was present. The child was well-oriented and pointed out pictures correctly in the book. The impression was—"It is now obvious that the patient is an athetoid; his intelligence is probably good."

Case 3.—D. L., a boy, 9 years, was referred with a parental diagnosis of cerebral palsy. The complaint was that he was slow in learning. The birth history was not remarkable. A cyanotic attack had developed in the early neonatal period, requiring artificial respiration. The patient took feedings poorly—had to be spoon-fed. The chronologies of motor development were normal except that spoken words and toilet training were delayed until the fourth year. He had had no seizures. He was never accepted for schooling. At examination the patient seemed attentive and obeyed commands readily. He answered simple questions monosyllabically but correctly, identified parts of the body, and counted up to three. His upper extremities showed frequent purposeless repetitive movements which were well coordinated and under voluntary control; these movements disappeared when the child was undressing himself or using a pencil. When the patient walked, his gait was slightly shuffling, with mild flexion of the knees. Tone and reflexes were normal; there were no contractures. Psychometric examination revealed an intelligence quotient rating of 46. The impression was—mental deficiency, with no organic motor defect of significant degree.

Case 4.—P. B. was a boy, 14 months. His mother was a registered nurse; her sister had bilateral hip disease of some kind. The patient did not sit up alone, and his muscles appeared very tight. An "emergency cesarian" had been performed because of a prolonged first stage with weakening of the fetal heartbeat. The birth weight was 6 lb. 8 oz. (2,960 gm.). The baby was cyanotic and required resuscitation; he was in an oxygen tent 12 hours. Thereafter no abnormality was noted except general tightness of the muscles. There were no convulsions. The patient held his head up at 6 months, but with an inclination to the right. He never crawled and could not sit by himself. He began to stand, walk and talk at 12 months. He was toilet-trained at 10 months. At examination the patient was well developed, alert, and interested. He used his hands and arms well but slumped in sitting. There was a "distinct tightness of the leg adductors bilaterally, so that abduction beyond 15 degrees appeared painful; the frog position could not be approached." An infantile type (supported) gait was present; there was no equinus or cross legging. Reflexes were modal. There was no palpable defect of the lumbar spine; the second and third toes were webbed bilaterally. X-rays showed no abnormality of the hips; there was spina bifida of the fourth lumbar vertebra. The impression was—"adductor spasm, presumably on the basis of spina bifida occulta."

---

[11] Strather, C. R.: Evaluating Intelligence of Children Handicapped by Cerebral Palsy, Crippled Child 23: 82 (Oct.) 1945. Burgemeister, B. B., and Blum, L. H.: Intellectual Evaluation of a Group of Cerebral Palsied Children, Nerv. Child. 8: 177 (April) 1949. Bice, H. V.: Psychological Services for the Cerebral Palsied, Nerv. Child 8: 183 (April) 1949.

[12] Hoopes, G. G.: Out of the Running, Springfield, Ill., Charles C Thomas, Publisher, 1939. Gesell, A., and Zimmerman, H. M.: Correlations of Behavior and Neuropathology in a Case of Cerebral Palsy from Birth Injury, Am. J. Psychiat. 94: 505 (Nov.) 1937.

At 20 months the mother had been following the prescribed exercises, and the patient had recently begun active crawling. He still slumped in sitting and tended to move his whole body whenever he moved an extremity. He did not walk except when supported. He talked well and fed himself entirely. At examination the patient was responsive and actively interested in playthings. In his use of the hands there was overextension of the fingers and accompanying truncal movements. His grasp was well coordinated, and there was excellent coordination of the extremities when he crawled. The tightness of the leg adductors was less marked than before, but there was now demonstrable tightness of the heel cords. When he walked with support, the chief characteristic seemed to be weakness of the lower extremities, with considerable pronation; there was no equinus or cross legging. The knee jerks were hyperactive and the ankle jerks normal. The impression was—"There is little doubt that the patient has rebral palsy of a mixed spastic-flaccid paraplegic type, with e involvement of the upper extremities and trunk."

ASE 5.—A. P., a boy 3½ years, did not walk. He was the enth child—three others are alive and well, the remaining ere stillborn. He had a breech delivery. There was nothing unusual in his postnatal status. There were no convulsions. He was toilet-trained at about 1 year and began to talk at about 18 months. He sat well, and no abnormality was suspected until his failure to walk at two years. At that time he was admitted to the hospital for a diagnostic work-up; the parents were advised that nothing wrong could be found. At examination the patient appeared well developed, rather fat, and bright. There was no deficiency of eyesight, hearing, speech or the upper extremities. He made a few progression movements in supported walking, but the legs seemed very weak. Muscle testing indicated the weakness to be of generalized distribution in the lower extremities. There was no atrophy. Spasticity was not a prominent feature, although a clonus could be obtained in the left ankle and the feet tended to exhibit a Babinski sign. The impression was—"paraplegia, of mixed spastic and flaccid type; etiology undetermined."

At 4 years the child was responding well to in-patient treatment. At first he showed resentment at not being carried as he was at home; he stated, "Don't you know I am too sick to walk?" He walked with crutches (no braces) and enjoyed prolonged periods at the standing table. At examination slight overflow movements were observed in the fingers with stress. The gait (with crutches) was very slow and deliberate but quite steady for 10 to 20 yards. The chief difficulty seemed to be weakness, with difficulty in balancing the trunk and initiating progression movements. The patient occasionally fell. The impression was—"the patient's progress is impressive but not so much due to treatment as to change in his mental outlook."

At 4½ years the patient walked without crutches or braces. At examination the gait was quicker and more secure than formerly but with a side-to-side sway and hyperextension of the lower part of the back. This improved with use of a cane. Muscle testing showed marked weakness in the gluteal groups bilaterally, as well as in the quadriceps and hamstrings. The reflexes (lower extremities) were hyperactive, and bilateral Babinski reflex was present. The impression was "cerebral palsy, chiefly with marked flaccid weakness of the hip girdle muscles."

CASE 6.—M. T., a girl 4 years, was referred with the diagnosis of cerebral palsy. She did not seem to understand what was said to her. She had had a full-term, normal delivery with no neonatal abnormalities. She sat up at about 10 months and did not stand till almost 2 years. She first walked at about 28 months and began to use a few words at about 2 years; even now her vocabulary was slight. She was fairly well toilet-trained at 2 years. There were no seizures. She fed herself and assisted with dressing. She played ball and other games with her younger sibling. The patient had been witness to frequent, violent quarrels between the mother and father and at times had been roughly handled by the latter. One Christmas morning the father came home and tore the Christmas tree to pieces; the patient turned white while this was going on. At examination the patient was an attentive but withdrawn child who seemed to hear and understand but was reluctant to carry out simple commands; the facial expression was grave and unchanging. Taken on a tour of the physical therapy department she carefully observed all features of interest but made no attempt to explore or speak. She refused to reach for or play with a ball. After some hesitation she accepted a picture book and leafed through it. Results of the motor examination were entirely normal. Psychometric examination revealed an intelligence level of 3½ years. The impression was—"severe emotional disturbance; no evidence of physical defect."

CASE 7.—J. R., a boy 10 months, did not sit or hold up his head. He was the first born of twins (the other child was normal) delivered precipitously at 8 months after a fall which ruptured the membranes. The birth weight was under 4 lb. (1,810 gm.). The patient was kept in the hospital for 15 weeks, receiving oxygen continuously because of feeding difficulties and frequent cyanotic spells. The hospital diagnosis was atelectasis. By comparison with the sibling the mother during the first few months became suspicious of abnormality in the patient. He lacked attentiveness, seemed rigid, and sometimes threw his head into extension. He had no convulsions. At times he tended to lie with his head turned to one side, the arm on this side being straight and the other curled up. He did not hold his hands in front or reach. He had no evident interest in dangled objects. The mother thought the patient saw but was uncertain that he heard. Examination revealed supine habitus with the head held to the right with tonic neck reflex (reversible). There was intermittent partial opisthotonos. The anterior fontanel was almost closed. The patient had no evident interest in his environment. He did not follow with his eyes; there was occasional spontaneous deviation of the eyes with slow nystagmus. He cried when a whistle was blown. There was no vocalization. Blink, sucking, and Moro reflexes were absent. There was universal increase in the muscle tone of the extensor groups, of the rigid type. The reflexes were difficult to evaluate because of rigidity. The head drooped in supported sitting. There was primary optic atrophy on the right and possibly on the left. The impression was —"severe brain damage, diffuse rigidity, mental defect and partial blindness."

CONCLUSION

A method has been outlined for physical examination of the cerebral palsied child. With the data obtained, amplified by special procedures as indicated, the examiner is in a position to establish the accurate diagnostic and prognostic evaluation on which the patient's rehabilitation program must necessarily be based. It is far beyond the scope of this article to describe how evaluation may be reached in every case. Perhaps no clinical condition offers such complexities of interpretation as the variety of disturbances grouped under the term "cerebral palsy." The physician must attempt to acquaint himself not only with the cerebral palsies themselves but with a number of syndromes that lie in bordering territory. A beginning may be made by tracing the writings of Phelps.[13]

A great deal remains to be learned about cerebral palsy—its causes, pathology, and treatment. The increased attention which cerebral palsy is receiving holds promise that significant advances will soon be made in all these categories and, it is hoped, in the early recognition of the condition by practicing physicians. So far as the individual patient is concerned, even with present knowledge the outlook for improvement is brighter than at any time in the past. For the physician who undertakes to assist the progress of the cerebral palsied child, the initial step is a thorough appraisal of the patient in terms of his background and development, and of his sensory, motor, and intellectual assets. Not only will the best interests of the individual patient be served thereby, but the physician will help to guide into fruitful channels the ever-increasing volume of lay and legislative assistance for cerebral palsied children in general.

85 Trumbull St.

13. Phelps, W. M.: Treatment of Cerebral Palsies, J. Bone & Joint Surg. **22:** 1004 (Oct.) 1940. Phelps, W. M.: Rehabilitation of Cerebral Palsy, South. M. J. **34:** 770 (July) 1941. Phelps, W. M.: The Differential Characteristics of Spasticity and Athetosis in Relation to Therapeutic Measures, New York J. Med. **41:** 1827 (Sept. 15) 1941. Phelps, W. M.: Recent Trends in Cerebral Palsy, Arch. Phys. Therap. **23:** 332 (June) 1942. Phelps, W. M.: Cerebral Palsy, J. Iowa M. Soc. **38:** 509 (Dec.) 1948. Phelps.[9]

PUBLIC HEALTH AND MEDICAL CARE FOR THE COMMUNITY AND THE INDIVIDUAL

Haven Emerson, M.D., New York

The term "health services" has been so generally used in this and previous Rural Health Conferences to describe or refer to organized provision for the sick that the true meaning of public health services has been quite overlooked or entirely disregarded.

Medical care of the sick is, of course, the primary object of the practice of personal and family medicine, the relief of suffering, pain, disability, anxiety, and fear of death being the purpose of diagnosis and treatment by the physician. In spite of irregular or uneven distribution of physicians to the disadvantage of small, scattered rural population groups as compared with large cities and metropolitan populations, there are but few of our people who cannot obtain medical care of good quality. No other nation has so liberal a ratio of physicians and hospital beds in proportion to the population at large as we have, and these ratios are steadily rising. It is to be understood that beyond the immediate purpose of relieving pain, fever, suffering, and the fears and anxieties of the sick, there is the object of returning the patient as promptly as possible to a state of health, to self-support, to gainful occupation, or at least to such well-being as age and the permanent handicaps of disease and injury permit.

But these two fields of medical care are not all that is included in personal medical service because the physician in general practice or in the specialties of clinical medicine concerns himself also with the prevention of disease, and the guidance of mother, child, and others of the family in the ways of healthy living at all ages.

These are the preventive services increasingly emphasized in the teaching of medical students and in the relations between the physician and his patients.

Thus it is fair enough to speak of medical care—whether at the patient's home, at the doctor's office, or at the hospital or outpatient center—as a health service if we are concerned solely with the individual or family which seeks the advice, the medical or surgical skill, or the guidance of their physician of choice or of the medical group with which their cooperative association has contract or agreement for medical attention.

We know that what we want is the best that the science and art of medicine can bring to the care of the sick. We know our failures in quality, quantity, and distribution of such medical care. We are making progress not only in the discovery of new means of early and accurate diagnosis and more nearly specific treatment of disease and injury, but in practical and economical ways of putting our knowledge and skills to work for the benefit of all who need them.

Never was there such good promise of our reaching an ideal of good medical care for all, at a cost within their individual or collective means.

THE FIELD OF PUBLIC HEALTH SERVICES

The primary distinction between medical care as above described and what is properly called public health services is that in the former all attention, devotion, skill, and resources are focused on the particular person whose suffering calls on the conscience and on all humanitarian motives for attention. This is the oldest, best developed, and most mature and successful of the uses of medical art and science.

What then of the relatively young, the immature, the still but partly developed field of public health services? These services consist of the application of the sciences of preventive medicine through government or with its authority for social ends. Here we are concerned not with the individual but with the community—the group or aggregate of people living under some unit of local government, or within a state or nation, a province or dominion.

In public health the servants of science are employees of government, not engaged to meet the momentary and personal necessities of a case of sickness, but to apply knowledge to prevention of disease as it affects the people as a whole.

The actual continuous use of an executive department of civil government to protect the people against disease

---

Read before the Sixth National Conference on Rural Health, Memphis, Feb. 23, 1951.

Member of the Board of Health, City of New York, and Professor Emeritus of Public Health Practice, Columbia University.

is hardly a hundred years old anywhere in our modern or occidental world. Emergencies of epidemic disease were once met by decree or law, forgotten as soon as pestilence had passed. Temporary measures were taken to meet a public fear or demand, but not until the middle of the last century did civil government enter the field of medical science and use its broad powers of authority and education to abate or control disease known to be practically preventable.

And yet, what is the present record of accomplishment in these our United States of today? Briefly, the facts are that at least 40 million of our fellows, our neighbors, live in local government jurisdictions, such as cities, towns, villages, counties, parishes, and boroughs, where there are no full-time professionally directed local public health services. Furthermore, not more than 5% of our people live in communities where the ratio of public health nurses, sanitarians, and other essential public health personnel to the population is adequate to carry out the modest function of good basic public health protection.

The fact is that in this conference and at its predecessors the field of public health has been almost wholly neglected while emphasis has been concentrated on medical care which has masqueraded under the deceptive and misleading title of "health services."

The sick we shall have always with us. Our hearts and hands, our minds and desires, will always be at their call. But why do we tolerate preventable disease? How can we reconcile our knowledge of the practical means of prevention with our neglect to make the facts understood and applied?

More doctors for the sick and more hospital beds will materially reduce sickness and death from the great of preventable diseases of nutritional, commun- le, and occupational character.

It rests with our actions as members of responsible local government, as citizens with votes, as property owners paying taxes, to decide whether we are to go on spending enormous sums for capital investments in institutions for the sick, or will meet the modest costs of preventive services which we can guarantee will reduce sickness, its present penalties, and future costs. Are we intelligent in spending from 10 to 20 times as much on medical care of the sick as we do on public health services that will reduce greatly the cost of medical care?

What are these public health services which can claim such potentialities, such benefits to the sick and well? What do we mean by an executive branch of local government devoted to applying the sciences of preventive medicine for social ends?

Why must local government be urged to concern itself with prevention, when we know it cannot be safely trusted with the direction and control of personal services to the sick?

Why do we crusade against compulsory medical care insurance under federal management and extol the obvious social benefits from the exercise of the only two resources of local government for the prevention of disease, the development of health, and the postponement of death, namely, authority of sanitary law and the persuasive influence of public health education?

THE SIX BASIC PUBLIC HEALTH FUNCTIONS

Permit me to answer these rhetorical questions by a brief description of what is meant today by local public health services, for this is what is being taught in our schools of medicine and public health and is practiced wherever a local health department is directed by professionally qualified health officers and staffed by sanitary, nurse, laboratory, statistical, and accessory technical and clerical personnel, and these have been supported by suitable tax appropriations.

I speak only of those functions of local government which neither the physician in private practice, the men and women of the community, nor any other department of government than the health department can perform competently.

Each of the six basic public health functions is indispensable to the practicable use of the sciences of preventive medicine. No one of these can be omitted without sacrifice of one or more of the remaining five. Each requires special education, practical training experience, and a devotion to the public interest quite comparable with the qualifications of physicians, nurses, and others concerned with care of the sick.

The four public health service functions first developed expressed the authoritarian or police power of government, and these four alone constituted the activities of practically all health departments up to the end of the 19th century. They are still of major basic importance and will probably remain so for the foreseeable future. The last two to develop involve primarily the principles and policies of education, that form of information and reasoning that leads to voluntary motives and action which have for their end-purpose better health for the individual, the family, and the community.

These six basic functions of local health departments constitute the substance, and substantially the whole of modern public health services. These are services for prevention of disease and the protection and promotion of the health of the whole community. These do not include the provision or operation of services for medical care except in certain communicable diseases for which chief responsibility falls upon the health department at least until such care is as well provided under private or institutional auspices.

Let me name these six functions and then deal with them separately.

1. Registration of births, deaths, and notifiable diseases.
2. Control of communicable diseases.
3. Control of environmental sanitation.
4. Provision of public health laboratory services.
5. Protection and guidance of the health of mothers, infants, and children through the years of elementary and high schools.
6. Public health education.

1. *Vital Statistics.*—These require the reporting, tabulation, analysis, and interpretation, and, if necessary, also the publication of rates and trends in natality, morbidity, and mortality. Only the government of sovereign states such as ours can require and enforce such record keeping as will constitute an accounting of human life. Without such a system, preferably with the primary registry of records in the office and under the direct authority of the health department, no reliable knowl-

edge of the prevalence and distribution of disease and the causes of death can be had, and no competent estimate can be made as to the results of measures intended for prevention or relative control of at least the preventable diseases and their chief causative factors.

You will admit that it is of wide social concern that we know of the births of babies invariably and promptly so that the hazards to life of the newborn may be reduced to the minimum.

A report of death if promptly made to the health officer may lead to immediate measures which will prevent a similar misfortune to others unaware of the preventable nature of their own occupational hazards. Without exact, prompt, and universal reporting of the notifiable diseases of communicable, occupational, nutritional, and other categories, the health officer is frustrated in applying measures applicable to the whole community.

2. *Communicable Disease Control.*—Only brief reference need be made to the control of communicable diseases, both those of acute nature in childhood and the diseases commonly of long duration and characterized by the presence of chronic carriers and spreaders throughout the community, such as tuberculosis, syphilis, malaria, amebic dysentery, and others. This is better understood to be a public responsibility than are some other public health functions. Here have been our most dramatic triumphs and in these diseases the cooperation between physicians, their patients, and the local health department has been close and most effective.

There is no conflict of interest or rivalry except in the doing well of a job that develops the best in the practice of private medicine and of official public health work.

3. *Environmental Sanitation.*—This is less well understood by the medical profession and the lay public.

The sanitary or public health engineer is an invaluable member of the interprofessional team that is the local health department. Without this nonmedical but biologically wise and public-health-trained sanitary leader and his field staff of inspector sanitarians, a health department's work will be relatively incomplete and incompetent, however good the medical health officer may be.

Every factor in the environment of man is potentially a hazard or a beneficient resource. It is the duty of the sanitary staff to reduce the hazards and develop the benefits of the environment in the interest of human development and survival.

The chief factors of environment to be controlled are air, water, food, and the occupational surroundings of working men and women.

We owe so much to the chlorination of our water, purification of sewage, pasteurization of milk, supervision of trade in edible shellfish, and prevention of damage from dust, fumes, and poisonous contacts in shops and factories that only the ignorant and money-stingy will withhold support for a strong sanitary section under high-grade professional leadership in every local health department serving a population of 50,000 or more.

4. *The Public Health Laboratory.*—This laboratory provides for such verification, correction, and identification of communicable diseases in man and animals as permit quick and reasonable control with the least inconvenience to patients, their attending physicians, and the public at large. Epidemiology, the science of group expression of disease whether communicable or of other origin, depends on the public health laboratory for its critical and identifying tests of disease sources of infection and modes of transmission. Analysis of water and food, especially milk and its products, requires experts in bacteriology and chemistry, and equipment and experience not commonly available in hospital or other laboratories concerned with care of the sick.

The laboratory of a health department not only offers its services freely to all physicians, but requires the submission of samples for examination necessary to correct or control a preventable source of infection or of contamination.

Environmental sanitation, communicable disease control, and much of the discovery and prevention of occupational and nutritional diseases depend on the integrity, skill, and alert competence of the public health laboratories of local and state governments.

These four functions rest on a solid background of statute law and local ordinances of boards of health, and the courts of all jurisdictions—up to the highest in the states and the nation—have, with a few rare and unimportant exceptions, supported the health department where its authority was challenged.

The reason for the almost invariable support of health authority has been the conservative attitude of health officers and boards of health in using legal authority so obviously in the public interest.

5. *Maternity and Child Hygiene.*—These are perhaps of greater concern to any nation than are any other problems of public health and preventive medicine. Everyone is more or less directly concerned with the replacement of the aging, passing generation by the new, the young, the oncoming population. We are determined to see that childbirth is accompanied with the least possible loss of mothers and infants, and that in the most vulnerable of all ages of mankind, the first days, weeks, months, and years of infancy, the irreducible minimum wastage of lives occurs. Obviously these goals cannot be reached through laws or ordinances but only by the guidance of man and woman in the hygiene of marriage, the expectant mother in a healthy way of life, and the rearing of children according to the principles of growth and development based on human biology. Where obstetrical and pediatric practice is of a high order and families seek for themselves such excellent care as is now widely available, there is little for a health department to do but to make sure that the means of protecting mothers and babies are known and used.

When the child joins a nursery class, a kindergarten, and presently enters on required elementary school education, public supervision of the child's health is needed, preferably only to supplement and reinforce the supervision intelligent parents obtain systematically from their own family physician. The doctors and nurses of the health department protect the school child against sanitary hazards of school and food practices, against the neglect of remediable defects of body and handicaps of mind and behavior patterns, and provide for medical examinations of such children that have not been so examined by the family physician. All this is in the interest of bringing the child to maturity best fitted in body and mind to put to use the education he has received at the schools until he is ready for employment or higher education. The first bureau of child hygiene in a local health department in this country was established in New York City in 1912. No local or state department of health in the modern sense can satisfy the people it serves without a well-developed division or bureau dealing with the health of mothers and children.

6. *Public Health Education.*—This field closes our list of basic public health services. Public health education was begun in New York City in 1914 under the late Dr. Charles F. Bolduan and now is provided for widely, if not universally, in all full-time health organizations by persons trained in educational methods, and is shared in by every member of the health department from the health officer to the office clerk.

COMMENT

The whole purpose of public health services is to put the knowledge of preventive medicine, of personal hygiene, and of environmental sanitation to work by all capable of understanding and following the teachings of human biology.

Public education, information, and guidance are the foundation of personal and community understanding of self-protection and self-development. Public health cannot be given to a community or bought by people as a commodity.

Health is the end-product of inheritance, environment, nd intelligent management of our individual lives. alth depends on character at least as much as on nowledge.

The department of public health of a modern American community is that instrument of society devoted to realizing the benefits of the sciences of preventive medicine for its own community.

The quality of public health services provided by local government is the best index of the intelligence and imagination of the people of any community.

CONCLUSIONS

The prevention of disease, the development of health of body and mind among the people, and postponement of death are three goals of public health, and these will bring economy of life, thrift in the expenditure of public money, and a reduction in our present large losses in life and wealth from preventable diseases and accidents.

As an immediate objective of this Conference on Rural Health, let me recommend that you commit yourselves to complete coverage of our nation with local health services, professionally directed, adequately supported, and with trained personnel in sufficient proportion to the population of the local jurisdiction of government. Communities of less than 50,000 persons can rarely afford a good local health department. Cooperative arrangements within and between adjacent counties for the purpose of supporting a good local health department are authorized by all but five of our states.

Public health nurses are needed in the ratio of not less than one per 5,000 of the population. Sanitarians are needed in the ratio of one to each 10,000 to 15,000 of the population.

The cost of a good local health department is not less than $1.50 per capita of the population per annum at present inflationary prices. In some areas the cost will be at least $2.00 per capita. Compare this with what you spend annually for medical care for sickness, much of which need not have occurred.

Without nation-wide coverage with good-quality local public health services we shall be losing the greatest benefits of the advancing knowledge of preventive medicine.

156 East 79th St.

CLINICAL NOTES

SKIN SCRAPINGS IN LEPROSY

POSITIVE RESULTS BY THE WAYSON TECHNIQUE IN EIGHTY-FOUR SUPPOSEDLY ARRESTED CASES

Robert K. Maddock, M.D., Norfolk, Va.

In recent years increasing importance is being attached to the bacteriological status of persons with leprosy. This trend is world-wide and is gradually limiting isolation to only those patients who are bacteriologically positive. Unfortunately, no clear definition of what constitutes a state of bacteriological negativity has been forthcoming. Under such circumstances it is likely that patients will be considered negative after a single attempt to demonstrate organisms. Skin scrapings at best provide but a poor sample of what is occurring in the patient's skin, and this technique is fraught with all the disadvantages of all other sampling techniques. Thus, to attribute exclusive significance to such a procedure, disregarding clinical findings, appears to be extremely hazardous.

Skin scrapings using the Wayson technique[1] were performed on 84 patients who had been considered bacteriologically negative and otherwise qualified for release from the hospital. These patients had had negative skin scrapings at not less than monthly intervals for at least one year. While but a single attempt was made to demonstrate the presence of Myobacterium leprae by the Wayson method, M. leprae was found in 19 of the 84 cases previously considered as apparently arrested.

The number in whom bacilli were found becomes even more significant if those patients in whom only inactive macules and neurological residuals could be demonstrated are subtracted from the total. It is completely legitimate to remove these patients from the total, since

---

From the United States Marine Hospital (National Leprosarium), Carville, La.

Chief of Medical Service, United States Public Health Service, United States Marine Hospital, Norfolk.

[1] Dr. Newton E. Wayson, United States Public Health Service (Retired), personally instructed me in the use of this technique. He had developed and modified it from previous methods during his assignment from 1927 to 1935 as medical director at the United States Leprosy Investigation Station, Honolulu, T. H.

M. leprae can be demonstrated very infrequently in the skin of such patients, regardless of the methods used. Thus, when the 25 patients with neural damage who had been considered negative are subtracted from the total of 84, a total of 59 patients remain to be considered. Of these 59, M. leprae was found in 19.

The important difference between the Wayson technique and the one previously used is that the sample of tissue is obtained from the entire thickness of the skin rather than from only the superficial layers. In addition, considerable effort is made to minimize dilution of the tissue sample with blood and tissue juices.

WAYSON TECHNIQUE OF SKIN SCRAPING

The area of skin to be examined is pinched tightly between the thumb and forefinger of the left hand. Pressure is applied long enough to blanch the skin. An incision is then made with a corner of a single-edged razor blade through the full thickness of the skin that is being held between the fingers. The incision need not be more than 5 mm. in length and is usually about 3 to 5 mm. in depth; however, great care should be exercised not to enter the fatty subcutaneous tissue. After the incision is made the razor blade is then rotated about 70 to 90 degrees and one surface of the incision scraped as the razor blade is brought back to the starting point of the incision. The entire procedure is accomplished rapidly in three motions. An effort is made to obtain a maximum amount of tissue, which, of course, is relatively small, with a minimum amount of dilution by tissue juice and blood. The material obtained by the "snip" is then carefully spread on a new (never used previously) glass slide, stained, and examined in its entirety. The smear should reveal numerous clumps of epithelial cells, and, if these cells are not present in rather large numbers, the snip should be considered inadequate and of relatively little value unless positive.

COMMENT

That the difference in the results obtained is almost wholly due to the difference in the technique of skin scraping, rather than to any other factor, is likely for the following reasons. There had been little if any change in the patients' clinical condition since they had been placed in the "apparently arrested" category. Well-trained personnel were available at all times to select the most favorable sites for scraping. All slides, both before and during this study, were stained and examined by the same highly trained microscopist. As an additional check, all patients who had shown M. leprae were rechecked by the formerly used technique at the sites found positive by the Wayson method. In spite of the fact that these sites were known in advance to be positive, it was possible to demonstrate M. leprae by the old technique in only four patients.

The significance of the number of positive skin scrapings obtained by the Wayson technique is even greater when it is appreciated that this number of positive results was obtained after only one attempt. Several of these patients had been examined repeatedly for many years with negative results, and the remainder had been bacteriologically negative at monthly intervals for at least one year.

Of the several factors that determine the positivity or negativity of a skin scraping the following are extremely important: 1. The number of organisms present in the skin. 2. The thoroughness with which the preparation is examined. 3. The site chosen for sampling. Determination of the sites most likely to demonstrate organisms requires a thorough clinical knowledge of leprosy. This point is generally under-emphasized. 4. The technique of performing skin scraping. The importance of this factor is not thoroughly appreciated, and it is for this reason that this study was reported.

CONCLUSIONS

1. Skin scrapings obtained from the entire thickness of the skin are superior to those obtained from the superficial layers. This is especially true in patients in whom but few organisms can be demonstrated.

2. To place confidence in negative skin scrapings without strict qualifications regarding the technique used, the qualifications of the person performing the tests, and, most important, the clinical condition of the patient appears extremely hazardous.

U. S. Marine Hospital.

AGRANULOCYTOSIS OCCURRING DURING METHIMAZOLE ("TAPAZOLE") THERAPY

REPORT OF A CASE

A. R. Croke, M.D., Colorado Springs, Colo.
and
J. W. Berry, M.D., Denver

A relatively new substance, methimazole, or 1-methyl-2-mercaptoimidazole ("tapazole"), has been reported by Stanley and Astwood [1] and Reveno and Rosenbaum [2] to be an effective antithyroid drug. Methimazole acts in a manner similar to, if not identical with, thiourea and thiouracil and their derivatives, i. e., it prevents the binding of iodine to protein in the thyroid gland. Its potency as determined by Stanley and Astwood [3] is considerably greater than either thiouracil or propylthiouracil. In experiments utilizing I^{131} these workers demonstrated that methimazole may be as much as 100 times as potent as thiouracil in the prevention of the binding of iodine to protein in the thyroid gland.

The optimal dose of this new compound remains to be established. It probably depends to a large extent on the individual patient. Reveno and Rosenbaum reported doses of 6 to 9 mg. per day to be effective, whereas Stanley and Astwood used up to 60 mg. per day. Both reports stress the effectiveness of the drug.

As far as we have been able to determine, no instances of major toxic reactions due to methimazole had been reported up to Jan. 1, 1951. The purpose of this report is to record a case of agranulocytosis occurring during clinical trial of methimazole in hyperthyroidism.

From the Department of Medicine, University of Colorado.

The methimazole ("tapazole") was supplied by Dr. D. C. Hines of the Eli Lilly Research Laboratories.

[1] Stanley, M. M., and Astwood, E. B.: 1-Methyl-2-Mercaptoimidazole: Antithyroid Compound Highly Active in Man, Endocrinology 44:588 (June) 1949.

[2] Reveno, W. S., and Rosenbaum, H.: Treatment of Hyperthyroidism with 1-Methyl-2-Mercaptoimidazole, J. A. M. A. 143:1407 (Aug. 19) 1950.

[3] Stanley, M. M., and Astwood, E. B.: Determination of Relative Activities of Antithyroid Compounds in Man Using Radioactive Iodine, Endocrinology 41:66 (July) 1947; Accumulation of Radioactive Iodide by the Thyroid Gland in Normal and Thyrotoxic Subjects and Effect of Thiocyanate on Its Discharge, ibid. 42:107 (Feb.) 1948.

REPORT OF A CASE

Mrs. B. C., a 65-year-old white woman, was admitted to the Colorado General Hospital, June 16, 1950, complaining of anorexia, dysphagia, and weight loss. She stated that she had been well until March, 1950, when she noted the onset of pain over the lumbar spine. This was followed shortly by nervousness, weakness, and tremor. Her physician prescribed sedative medications, which considerably enhanced her feeling of well-being. However, her symptoms progressed, and dysarthria and dysphagia developed. By July, 1950, she had lost 35 lb. (16 kg.). A review of symptoms revealed that marked heat intolerance, severe tremor of the hands, and intermittent watery diarrhea had been present since the onset of her illness. She stated she had had a goiter for many years, but denied any symptoms suggestive of hyperthyroidism prior to the present illness. The remainder of the history was not contributory.

Physical examination on admission revealed a dehydrated, acutely ill white woman. Her skin was warm, moist, and of smooth texture. Examination of the eyes, ears, nose, and throat revealed no abnormalities except moderate tortuosity and narrowing of the retinal arterioles. The thyroid was diffusely enlarged, and two small nodules, about 1 cm. in diameter, were palpable in the isthmus. A definite bruit of moderate intensity was audible over the thyroid. Indirect laryngoscopy revealed laryngitis sicca, but the vocal cords moved normally. The thorax was symmetrical, and the lungs were clear to percussion and auscultation. The blood pressure was 152 systolic and 86 diastolic; the pulse rate was 88 per minute; the rhythm was regular. The heart was not enlarged, and no murmurs were heard. Examination of the abdomen and pelvis revealed no abnormality. There was a rapid, fine tremor of the hands and slight pitting pretibial edema. Results of the neurological examination were within normal limits.

Daily White Blood Cell Count

Date	Total Leuko-cytes	Poly-morpho-nuclear Cells	Lympho-cytes	Mono-cytes
12/15/50*	1,900	0	76%	21%
12/16/50	2,850	0	79%	21%
12/17/50†	3,400	0	90%	9%
12/18/50	1,700	7%	69%	24%
12/19/50	3,800	40%	41%	19%
12/20/50	4,200	50%	41%	9%
12/22/50	10,700	70%	23%	7%
12/23/50	8,300	68%	29%	3%

* There were 3% unidentified cells on this date.
† On this date there were 1% plasma cells.

Urinalysis showed a trace of albumin but no sugar or acetone; there were no abnormal formed elements. A complete blood count revealed a hemoglobin level of 13.8 gm. per 100 cc., 4,500,000 red blood cells, 12,000 white blood cells, with 76% polymorphonuclear cells, 18% lymphocytes, 3% monocytes, and 3% eosinophils. The Wassermann reaction was negative. The erythrocyte sedimentation rate (Westergren) was 22 mm. per hour. Results of blood chemistry studies were as follows: nonprotein nitrogen 25 mg., cholesterol 152 mg., serum calcium 9.1 mg., serum protein 4.82 gm., albumin 2.42 gm. and globulin 2.40 gm. per 100 cc., and serum alkaline phosphatase 6.9 Bodansky units. The blood and bone marrow were negative for aerobic and anaerobic pathogens, and the bone marrow was also negative for acid-fast bacilli. A sulfobromophthalein sodium test showed 44% of the dye retained in one hour. The basal metabolic rate on August 21 was +37% and on August 28, +52%. X-ray examination of the cervical, dorsal, and lumbar spine showed a moderate degree of hypertrophic osteoarthritis and generalized demineralization of the bones. Roentgenograms of the chest, skull, abdomen, and gastrointestinal tract revealed no abnormality. A barium enema revealed no abnormality. An intravenous pyelogram was normal. Bone marrow aspirated from the iliac crest showed a moderate hyperplasia of all elements but was otherwise normal.

On August 28 treatment with 300 mg. propylthiouracil daily was started. On September 2 the patient was discharged to a convalescent home. She returned to the outpatient clinic on September 21, at which time extreme weakness, a marked tremor, and emaciation were noted. The pulse was regular at 144 per minute. She complained at this time of pain and immobility of the right shoulder, but x-ray examination at that time revealed only demineralization of the humerus and right scapula. She was advised to have physical therapy and to return after a basal metabolism test. The basal metabolic rate on September 27 was +45% and the blood cholesterol level was 137 mg. per 100 cc. Examination revealed her pulse to be regular at 120 per minute; marked emaciation, heat intolerance, and tremor were still present.

On inquiry at the convalescent home it was discovered that, by error, all of her medications had been discontinued on September 12. Therefore, she was given methimazole, 10 mg. every eight hours, thiamine hydrochloride 5 mg. three times daily, and elixir of phenobarbital 4 cc. three times daily. She had not received any medication for 41 days at that time. The white blood cell count at that time was 5,400; a differential count was not done. The basal metabolic rate on October 24 was reported as +53%. She next returned to the clinic on November 13, at which time the basal metabolic rate was reported as +58%. On November 27, there was again some clinical improvement, although the basal metabolic rate was reported as +69% and the blood cholesterol 167 mg. per 100 cc. At this time the dose of methimazole was increased to 20 mg. administered every eight hours. On December 11 the basal metabolic rate was reported as +58%. The patient, however, was very much improved subjectively and was strong enough to walk. A blood cell count was requested on this day but was not done.

On December 14 the patient was brought to the emergency room of Colorado General Hospital, because the preceding day diarrhea, chills, and a temperature of 104 F orally had developed. At this time the salient physical findings were as follows: The patient was moderately emaciated, with a rather marked tremor of the hands. She was somewhat somnolent and disoriented. Her temperature was 103 F by mouth, the pulse rate 100, the blood pressure 120/70, and respirations 24. There were no abnormal eye signs. A small ulcerated area was present in the pharynx. The thyroid was diffusely enlarged; no bruit was audible. There was no nuchal rigidity. The lungs were clear to percussion and auscultation, and there was no change in the cardiac status from previous examination. The liver was 1 cm. below the costal margin, there was no abdominal tenderness, and the spleen was not palpable. The skin showed a diffuse mottled erythema. Results of the neurological examination were not remarkable. The white blood cell count was reported as 3,850 per cubic millimeter, with 82% lymphocytes and 18% monocytes.

The patient was immediately hospitalized and placed on the following regimen: penicillin, 100,000 units intramuscularly every three hours, terramycin, 250 mg. orally every four hours, folic acid 5 mg. three times daily, cortisone, 100 mg. intramuscularly daily. Phenobarbital, thiamine, and methimazole were discontinued. Examination by bone marrow aspiration on December 15 showed a marked relative increase in the erythroid and lymphocytic series, which was thought to be due to the almost complete absence of granulocytes and granulocyte percursors. Only an occasional myelocyte and a very rare promyelocyte were seen. This picture was interpreted as indicative of agranulocytosis. Daily white blood cell counts are shown in the table.

During the first four days of this hospitalization period, the patient was acutely ill, with temperatures ranging from 102 to 104 F. On December 16 her heart rate was found to be very rapid and irregular, and an electrocardiogram revealed auricular fibrillation. She was therefore given digitoxin, 1.6 mg. in divided dosage, and an electrocardiogram on December 21 showed that she had a normal sinus rhythm. On the fourth hospital day the temperature fell to normal; after this, she showed gradual symptomatic improvement. Basal metabolism tests gave the following results: Dec. 27, 1950, +34%; Jan. 6, 1951, +36%; and Jan. 10 +53%. The patient was given strong iodine (Lugol's solution) from January 6 to 15, in preparation for surgery. On January 15 a subtotal thyroidectomy was performed. The patient then began to show gradual improvement and weight gain. She was discharged from the hospital on February 3; subsequent outpatient clinic visits have shown good healing of the wound and continued weight gain. Tremor, heat intolerance, and nervousness have disappeared, and the patient is fully ambulatory.

COMMENT

Admittedly, from the evidence at hand we cannot be certain that the agranulocytosis which occurred in this patient was due to methimazole. However, because of the course of events and the fact that the other antithyroid drugs are known to produce agranulocytosis, we consider it fair to assume that the condition in this patient was due to the drug. We did not readminister the drug in order to reproduce a recurrence of agranulocytosis because we consider such a procedure too dangerous.

Agranulocytosis as a manifestation of toxicity of the thioureas and related drugs has been reported to occur with varying frequency, depending on the compound used. On the basis of experience thus far, it seems unlikely that any potent antithyroid drug will be completely free of this complication. However, while agranulocytosis was a serious problem when thiouracil was being widely used, the introduction of propylthiouracil appears to have greatly reduced the danger. To our knowledge Juliar and Harris [4] have reported the only fatal case of agranulocytosis due to propylthiouracil. Bartels [5] has reported that, of 672 patients treated with propylthiouracil by him, agranulocytosis appeared in only three, none of whom died. Thus, the frequency of agranulocytosis appears to be less than the mortality of thyroidectomy in thyrotoxicosis. The incidence of this complication with the use of methimazole cannot be determined at present, since relatively few patients have received the drug.

Frequent white blood cell counts generally are recommended for the early detection of leukopenia and the prevention of agranulocytosis during drug therapy. There are two major considerations that should determine the necessity of frequent blood cell counts. The first is, of course, whether agranulocytosis occurs with sufficient frequency as a result of therapy of any given drug to warrant expenditure of the additional time and expense involved. Some workers [6] are of the opinion that, when one is using propylthiouracil, the threat of agranulocytosis is so slight that frequent routine blood cell counts are not necessary and that determination of the white blood cell count is required only with the occurrence of fever or sore throat. The second consideration is whether frequent blood cell counts will anticipate the occurrence of agranulocytosis. This concept has been questioned by Young,[7] who has shown that, in some cases at least, the peripheral blood reflects the changes going on in the marrow only after the changes in the marrow are far advanced. He states, therefore, that frequent blood cell counts are uninformative and unnecessary. There is, however, no general agreement on this point, and much further work is necessary before the final answer to the problem will be clear. However, on the basis of our experience, we would recommend that frequent white blood cell counts be performed during methimazole therapy, although we cannot be certain that frequent counts give warning of impending agranulocytosis.

SUMMARY

A case of nonfatal agranulocytosis occurring during administration of a relatively new antithyroid drug, methimazole, or 1-methyl-2-mercaptoimidazole ("tapazole"), is reported.

400 Burns Bldg. (Dr. Croke).

4. Juliar, B., and Harris, T. L.: Fatal Agranulocytosis Occurring During Propylthiouracil Therapy: Report of Case, J. A. M. A. **139**: 646 (March 5) 1949.

5. Bartels, E. C.: Agranulocytosis During Propylthiouracil Therapy, Am. J. Med. **5**: 48 (July) 1948.

6. McCullagh, E. P.; Hibbs, R. E., and Schneider, R. W.: Propylthiouracil in Treatment of Hyperthyroidsm, Am. J. M. Sc. **214**: 545-552 (Nov.) 1947.

7. Young, C. J.: Leucocyte Counts in Prevention of Drug Agranulocytosis, Brit. M. J. **2**: 261 (July 30) 1949.

CANICOLA FEVER

REPORT OF A CASE IN WHICH AUREOMYCIN AND PENICILLIN WERE USED

Fred W. Whitehouse, M.D., Detroit

Twelve years ago the first human case of canicola fever in this country was reported.[1] The disease is described as an acute febrile illness caused by infection with Leptospira canicola. Since then case reports have become more numerous,[2] and in 1946 the literature was reviewed by Rosenbaum.[3] The case presented in this paper is reported in order to reemphasize the more frequent occurrence in the United States of a once exotic disease and to indicate the clinical effectiveness of aureomycin in treatment of it.

REPORT OF CASE

On April 21, 1950, G. A., a 71-year-old Armenian, entered the Henry Ford Hospital via the emergency room, too ill to give any history. Relatives related that the patient had been well until five days prior to admission. At that time he appeared lethargic and had a productive cough; on one occasion blood was noted. Three days prior to admission his urine was the color of dark tea, but no jaundice and no clay-colored stools were noted. Neither fever nor chills were present. A systemic review revealed nothing significant except anorexia. Two days prior to admission the patient became disoriented and incontinent of urine. The patient's past history was noncontributory except for malaria contracted while he was living in Armenia.

Physical examination revealed an acutely ill, moderately dehydrated elderly man who was unable to answer direct questions. The temperature was 101 F rectally, pulse rate 120, and

---

From the Division of General Medicine, Department of Medicine, Henry Ford Hospital, Detroit.

Mrs. Norma Broom of the Detroit Department of Health performed the leptospiral agglutination tests.

1. Meyer, K. F.; Eddie, B., and Anderson-Stewart, B.: Canine, Murine and Human Leptospirosis in California, Proc. Soc. Exper. Biol. & Med. **38**: 17-19, 1938.

2. (*a*) Meyer, K. F.; Anderson-Stewart, B., and Eddie, B.: Canicola Fever, a Professional Hazard, J. Am. Vet. M. A. **93**: 332, 1938. (*b*) Bruno, F. E.; Wilen, C. J. W., and Snavely, J. R.: Spirochetal Jaundice: Report of 15 Cases, Including 2 Cases of Leptospira Canicola Infection, J. A. M. A. **123**: 519-524 (Oct. 30) 1943. (*c*) Tievsky, G., and Schaefer, B. G.: Canicola Fever (Leptospirosis Canicola): Report of a Human Case and a Review of the Literature, M. Ann. District of Columbia **13**: 11-16, 1944. (*d*) Doerner, A. A., and Hernandez, T.: Canicola Fever: Case Report, Mil. Surgeon **103**: 368-371, 1948. (*e*) Baker, M. D., and Stuart, R. D.: Leptospirosis Canicola: Case Treated with Penicillin, Lancet **2**: 594-596, 1946. (*f*) Molner, J. G.; Meyer, K. F., and Raskin, H. A.: Leptospiral Infections: Survey, J. A. M. A. **136**: 814-819 (March 20) 1948. (*g*) Weetch, R. S.; Colquhoun, J., and Broom, J. C.: Fatal Human Case of Canicola Fever, Lancet **1**: 906-907, 1949. (*h*) Mackay-Dick, J., and Watts, R. W. E.: Canicola Fever in Germany, ibid. **1**: 906-910, 1949.

3. Rosenbaum, H. D.: Canicola Fever: Case Report and Review of Literature, Arch. Int. Med. **78**: 531-543 (Nov.) 1946.

respiration rate 32 per minute. Breathing was labored. The skin and scleras were icteric. Funduscopic examination was inadequate because of senile cataracts. The pharynx was moderately injected. There was no lymphadenopathy. The chest examination revealed moderate emphysema but no splinting. There were many moist rales at the base of the right lung posteriorly, with harsh breath sounds but no percussion impairment. Blood pressure was 124 systolic and 78 diastolic. The findings of the heart examination were within normal limits. The abdomen was distended and tympanitic, with hypoactive bowel sounds. No masses or organs were palpable. There was tenderness on percussion over the liver. Rectal examination was noncontributory. Neurologic examination demonstrated the classic findings of Parkinsonism. The working diagnosis upon admission was infectious hepatitis with pneumonitis.

The results of initial laboratory studies were as follows: Hemoglobin, 13.7 gm. per 100 cc.; red blood cell count, 4,200,000; white blood cell count, 19,350, with 93% polymorphonuclear leukocytes; nonprotein nitrogen, 35 mg. per 100 cc., and sugar, 129 mg. The Van den Bergh test showed 5.6 mg. of total bilirubin and 3.6 mg. of direct bilirubin. The Kline exclusion test gave a negative result. It was felt that the marked leukocytosis was against the diagnosis of infectious hepatitis. Twenty-four hours later the white blood cell count was 18,750, with 89% polymorphonuclear leukocytes.

On the second hospital day further history revealed that the patient lived in a neighborhood infested with rats. No rat bite was evident. Canine contact was denied. The hospital course was characterized by continued toxicity, severe frontal headache, and generalized myalgia, not notably localized to the calf muscles. On the third hospital day severe hemorrhagic conjunctivitis developed, while the icterus was apparently fading. At this point, laboratory studies to establish the diagnosis of Weil's disease were undertaken.

Upon admission therapy was instituted immediately with procaine penicillin G (crysticillin®), 300,000 units every 12 hours intramuscularly. However, the temperature continued to spike. Because of the possibility of Weil's disease, aureomycin was given on the third hospital day. It was given orally in a dosage of 2 gm. per day for two days, followed by 1 gm. per day. After this therapy the patient's temperature dropped by lysis, and 48 hours later he was afebrile.

Progress laboratory studies revealed gradually diminishing icterus, the serum bilirubin being 0.8 mg. per 100 cc. on the 10th hospital day. Results of a battery of liver function tests were all within normal limits. Serum diastase was 130 mg. per 100 cc. (normal is 50 to 200 mg. per 100 cc.). Two blood cultures and one urine culture were negative. Repeated urinalyses were negative, except for an occasional granular cast and a 1+ reaction for albumin in one specimen. At no time was azotemia present. Stool studies were not remarkable. A lumbar puncture on the seventh hospital day was completely negative for both routine and leptospiral studies. On the 18th hospital day a progress white blood cell count was 11,250, with 78% polymorphonuclears. A sulfobromophthalein (bromsulphalein®) sodium test on the 21st day showed 20% retention in 45 minutes and 17% retention in 60 minutes. A needle biopsy of the liver revealed portal cirrhosis, grade 2.

Blood and urine specimens examined on the fourth and eighth hospital days by the dark-field technique were negative for leptospirae. These specimens were also inoculated into adult guinea pigs. Kidney sections from the inoculated animals stained by the Levaditi method also failed to demonstrate the leptospirae. Kidney emulsions from the first group of guinea pigs injected intraperitoneally into a second group of guinea pigs also gave negative results. However, blood specimens drawn from the patient at the same time as the above tests were made (on the 9th and 13th days of illness) gave positive agglutinations for Lept. canicola in a dilution of 1:1,000 and for Lept. icterohemorrhagiae in a dilution of 1:100. On this basis a diagnosis of canicola fever was felt to be firmly established. A progress agglutination test done 65 days after onset of illness was positive for Lept. canicola in a dilution of 1:300, with a doubtful agglutination at 1:1,000. The agglutination for Lept. icterohemorrhagiae at this time was negative.

The patient's clinical course was one of steady improvement. On the eighth hospital day his first course of aureomycin was discontinued. The total dosage was 7.5 gm. However, on the 13th day there was a recrudescence of fever to 101 F orally. Because of this, aureomycin was instituted again in a dosage of 2 gm. in 14 hours, followed by 1.5 gm. daily. Administration of aureomycin was continued for the remainder of the patient's hospital stay. In spite of apparent complete clinical and laboratory recovery, he continued to run a low-grade fever. He was discharged to convalesce at home on the 25th hospital day, the 30th day of his illness.

COMMENT

It is impossible clinically to differentiate between canicola fever and the commoner Weil's disease, infestation with Lept. icterohemorrhagiae. One has to supplement the clinical picture with serologic and epidemiologic data. No animal other than the dog has been incriminated as a natural reservoir of Lept. canicola, although Molner [2f] feels that rats have not definitely been excluded. In our case no contact with dogs could be elicited, but the patient was known to be living in an area thickly infested with rats. This adds weight to Molner's hypothesis.

Many observers [4] have emphasized certain clinical signs and symptoms somewhat peculiar to leptospirosis, namely, hemorrhagic conjunctivitis and myalgia specifically localized to the gastrocnemius group. It was the appearance of the former in connection with the rest of the clinical picture that first suggested the correct diagnosis to us. Others [5] have pointed out the relative benignity of canicola fever, emphasizing the low mortality as well as the low incidence of renal, cutaneous, and hepatic manifestations. Our case followed this rule, except for the occurrence of jaundice.

We depended for the diagnosis entirely upon the agglutination-lysis test of Schuffner.[6] Samples of blood and urine were examined under dark-field illumination for leptospirae as well as inoculated into guinea pigs without success. It has been suggested [7] that hamsters (Cricetus auratus) be used for inoculation, because of the greater virulence of Lept. canicola for them as well as the relative resistance of guinea pigs to the canicola strain. Our failure to isolate the organism in vivo was probably due to this resistance. The failure of the titer to rise during convalescence was puzzling, until it was brought to our attention that previous experience with aureomycin in leptospirosis presented the same curious phenomenon. The reason for this is not clear at this time but is being studied by another group.

Penicillin therapy was arbitrarily instituted on the patient's admission to the hospital, because of signs of pneumonitis. When the possibility of Weil's disease became apparent, as well as the continuing toxic course in spite of seemingly adequate penicillin dosage, it was felt that aureomycin therapy was indicated. Experimentally, it has been shown that aureomycin is at least twice as effective against Leptospira as is penicillin.[8] The rapid defervescence plus the remarkable clinical improvement following aureomycin administration suggested its unusual efficacy as an antileptospiral agent. However, no definite conclusions can be drawn, because penicillin was given concomitantly. The recrudescence of fever in spite of continued clinical improvement indicated to us incomplete eradication of the infection. Therefore, aureomycin was readministered. That this febrile episode may have indicated a natural relapse present in 25% of cases of Weil's disease cannot be dismissed. In spite of seemingly adequate aureomycin therapy, the patient continued to run a low-grade fever. It was felt that this may have been due to the drug. Proof of this is lacking, as the patient was discharged before there had been an adequate period in which to observe him after aureomycin therapy had been discontinued.

---

[4] Rosenbaum.[3] Ashe, W. F.; Pratt-Thomas, H. R., and Kumpe, C. W.: Weil's Disease: Complete Review of American Literature and an Abstract of World Literature; 7 Case Reports, Medicine **20**: 145-205, 1941. Bertucci, E. A., Jr.: Leptospirosis, Am. J. M. Sc, **209**: 86-111, 1945. Senekjie, H.: Clinical Manifestations of Leptospirosis in Louisiana, J. A. M. A. **126**: 5-10 (Sept. 2) 1944.

[5] Weetch, Colquhoun, and Broom.[2g] Mackay-Dick and Watts.[2h] Rosenbaum.[3]

[6] Schuffner, W. A. P.: Recent Work on Leptospirosis, Tr. Roy. Soc. Trop. Med. & Hyg. **28**: 7-37, 1934.

[7] Morton, H. E.: Susceptibility of Syrian Hamsters to Leptospirosis, Proc. Soc. Exper. Biol. & Med. **49**: 566-568, 1942. Randall, R., and Cooper, H. K.: Golden Hamster (Cricetus Auratus) as a Test Animal for Diagnosis of Leptospirosis, Science **100**: 133-134, 1944.

Slowly, reports are accumulating showing the effectiveness of aureomycin in cases of human leptospirosis.[9] This has been shown to be the case in experimental leptospirosis.[8] We feel that aureomycin, at present, is the drug of choice in leptospiral infections, and it is suggested that this drug be used exclusively in patients suspected of having leptospirosis, in order to establish definitely its clinical efficacy. Neither optimum daily dosage nor length of course of aureomycin can be suggested from this experience, although 2 gm. per day, given orally and continued for five to seven days after defervescence, appears adequate and safe.

SUMMARY

A patient with canicola fever treated with aureomycin and penicillin is reported. Aureomycin appears to have shown definite antileptospiral activity in human infections, superior to that of penicillin. It is felt that aureomycin is the drug of choice in the treatment of leptospirosis in humans.

[8] Heilman, F. R.: Aureomycin in Treatment of Experimental Relapsing Fever and Leptospirosis Icterhemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **23**: 569-573, 1948.

[9] Batchelor, T. A., and Todd, G. M.: Aureomycin and Penicillin Therapy in Leptospirosis (Weil's Disease), J. A. M. A. **143**: 21-22 (May 6) 1950. Brainerd, H. D.; Linnette, E. H.; Meiklejohn, G.; Bruyn, H. B., Jr., and Clark, W. H.: Symposium on Antibiotics: Clinical Evaluation of Aureomycin, J. Clin. Invest. **28** (pt. 1): 992-1005 (Sept.) 1949.

Ulcerative Colitis and Cancer.—A person who acquires ulcerative colitis in the second decade of life and continues to suffer from active disease until he is 30 faces a real hazard in possible malignant degeneration. The hazard, however, is not in itself sufficiently ominous to demand surgical extirpation of the colon and rectum without other indications. Actually in most cases of persistently active colitis for 10 years or more, the indications for surgery are quite clear even without the added indication of the hazard of cancer. In patients for whom an ileostomy has been necessary, it would seem that the danger of malignant degeneration was sufficient to make total colectomy advisable. Patients who are under medical observation and treatment for chronic ulcerative colitis should be examined at intervals for evidence of malignant degeneration. Much of the value of this policy is mitigated by the frequently observed characteristic that cancer under these circumstances is incurable by the time it has developed to the point at which it can be diagnosed.—Everett D. Kiefer, M.D., Malignant Degeneration in Chronic Ulcerative Colitis, *Gastroenterology*, September, 1951.

TRAUMATIC PERFORATION OF THE COLON IN A PATIENT WITH A COLOSTOMY

Earle I. Greene, M.D.
and
J. Major Greene, M.D., Chicago

Traumatic perforation of a normal colon following irrigation through a colostomy stoma is an infrequent occurrence. A review of the literature for the last 18 years reveals only one report [1] of a similar complication. Traumatic perforation of the normal colon from foreign bodies, nonpenetrating wounds of the abdominal wall, or compressed air has been reported in the literature more frequently. Since perforation of a normal colon proximate to a colostomy stoma may occur, it is essential that the physician be aware of its possibility and that patients be given detailed instructions for safely irrigating the bowel.

The literature contains many articles on the postoperative care of patients with a colostomy, but little has been written about the proper administration of enemas. There appear to be two ways in which a perforation of a normal colon in such a patient can occur. First, the patient by being rough, may force a stiff tube through the wall of the colon. Second, the intermittent rubbing of the catheter against the same portion of the colon may produce a weakened area and eventually cause perforation, especially when there is an angulation of the colon proximal to the stoma.

A proper method for giving an enema has not been agreed upon. Dr. Vernon David, as quoted by Davis,[1] recommends that the enema catheter be placed through a "hygeia" nipple, in order that regurgitation of the solution be avoided, and that the catheter project from the nipple not more than the thickness of the abdominal wall. Wiley and Sugarbaker [2] recommend that the end of the catheter be lubricated with petrolatum and inserted slowly 6 to 8 in. (15 to 20 cm.) into the colostomy. To prevent a regurgitation of the irrigating fluid from the colostomy stoma, they suggest the use of a "hygeia" nursing nipple" with the end of the nipple cut so that a catheter can be passed snugly through it and then inserted into the colostomy stoma." Lahey [3] suggests that the catheter be well greased and inserted at least 6 in. or, if possible, the full length.

REPORT OF A CASE

N. S., a 70-year-old man, was admitted to the hospital with a history of rectal bleeding of six months' duration. Examination revealed a fungating mass 1 to 2 cm. in diameter, located on the anterior surface of the rectum, 10 cm. from the anal skin margin. A biopsy showed the lesion to be adenocarcinoma. An abdominoperineal resection, including most of the descending colon, was done. The pathological diagnosis was adenocarcinoma of the colon 9 cm. above the anorectal junction.

Three months after the operation the patient returned to the hospital emergency room, giving the following history: He had irrigated his colostomy with an F 18 male catheter that morning

---

From the Department of Surgery, Chicago Medical School, and Mount Sinai Hospital.

[1] Davis, C., Jr.: Enema Tube Perforation of Colon, Ann. Surg. **126**: 377-379 (Sept.) 1947.

[2] Wiley, H. M., and Sugarbaker, E. D.: Colostomy, Indications, Technique and Management, Surg., Gynec. & O[illegible]1: 435-4[illegible] 1950.

[3] Lahey, F. H.: The Truth About Colo[illegible]Lahey Cl[illegible] 5: 130-136 (July) 1947.

when he felt something give way. Severe abdominal pains ensued, and he fell to the floor. Examination eight hours after the irrigation showed the patient in shock, with blood pressure of 80/40, pulse rate of 120 per minute, and tenderness throughout the abdomen but no rigidity. Tenderness was especially marked in the area just proximal to the colostomy opening. A few bowel sounds were heard. A scout roentgenogram of the abdomen showed that the stomach was dilated and contained a considerable amount of gas, which is frequently seen in patients in shock. There was no evidence of dilation of the bowel nor of free air in the peritoneal cavity. A diagnosis of perforation of the colon due to the introduction of an enema tube was made and surgery advised.

Approximately 12 hours elapsed between the introduction of the enema tube and the time of surgery. When the abdominal cavity was opened, purulent bloody fluid was found. In the vicinity of the colostomy, many small loops of bowel were found matted together and adherent to the colon near the colostomy opening. The small bowel was separated from the colon, and a perforation on the posteriorlateral wall of the colon about 8 cm. from the colostomy opening was found. Since the perforation, which was in normal colon, could not be closed because of its location, about 10 cm. of the distal colon, including the perforation, was resected and a new colostomy established.

A pathological report was made on the specimen, which consisted of a segment of large intestines 9 cm. in length. At one end it was surrounded by a narrow rim of gray skin forming a colostomy opening. Sections of the colon through the colostomy opening revealed the transition between the normal mucosa and the skin. A few foreign body granulomas were noted in the submucosa and the muscular wall. Section through the perforation at the opposite end of the specimen revealed necrosis of the muscular wall and diffuse infiltration with neutrophilic leukocytes and a few plasma cells. The pathological diagnosis was perforation and acute inflammation.

The patient was discharged from the hospital after a stormy postoperative course, during which pneumonia and an abdominal wall infection developed.

SUMMARY

Perforation of the colon proximal to the colostomy stoma with peritonitis following the administration of an enema is described. Several methods of irrigating the colon are mentioned, but we feel that the method of David is perhaps the safest procedure.

25 E. Washington St. (Dr. J. Major Greene).

Vertigo Versus Dizziness.—The symptoms, "vertigo," "dizziness," "blackout," "unsteadiness," "drunkenness," "imbalance" and the like, are among the most frequent met with in medicine. The potential differential diagnostic value of these symptoms seems not to have been realized because of a lack of clarity in the mind of the examining physician as to the exact meaning of these individual terms. The tendency to consider them as synonyms has risen to the detriment of diagnosis. . . .

Proper definition of vertigo as a sense of whirling of the outside world or of the entire individual allows the term to be restricted to sensations arising from the vestibular system, comprised by the end organ, the vestibular nuclei and their central connections.

The term "dizziness," confined to a sense of motion within the head with a dimming of visual and auditory sensation, can be assigned to those symptoms arising from temporary cerebral ischemia, and both vertigo and dizziness can be differentiated from the sensation of unsteadiness produced by incoordination resulting from suppression or irritation of extralabyrinthine equilibrial reflexes. The examiner should never be satisfied with a monoverbal reply but should endeavor to get a clear mental picture of the sensation felt by the patient, because the laity are universally confused as to the meaning of these terms. If this is done, a useful diagnostic tool is secured.—Henry L. Williams, M.D., Vertigo, *Minnesota Medicine*, September, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

Some years ago the Council issued a report outlining the criteria for acceptance of chemical contraceptive preparations as established by its Advisory Committee on Contraceptives (J. A. M. A. **123:**1046 [Dec. 18] 1943). *The criteria also appear in New and Nonofficial Remedies. The evaluation of contraceptive preparations requires both clinical and laboratory evidence of their spermicidal efficiency. A satisfactory laboratory method previously developed for determining the spermicidal time against human spermatozoa has been employed for the comparison of various products available on the market (Becker, B., and Gamble, C. J.: The Spermicidal Times of Contraceptive Jellies and Creams, 1946,* Human Fertil. **11:**111-114, 1946). *A similar study of products available in 1949 has been recently completed. The Council has authorized publication of the following report of this study submitted by Clarence J. Gamble, M.D., and Lois Hamblin, from the Department of Anatomy, Harvard Medical School. The authors' findings do not affect the status of those products already accepted for inclusion in New and Nonofficial Remedies nor of those not accepted.*

R. T. STORMONT, M.D., *Secretary.*

THE SPERMICIDAL TIMES OF CONTRACEPTIVE JELLIES AND CREAMS, 1949

Clinical contraception may be accomplished by any means that will prevent the spermatozoa from reaching and fertilizing the ovum. When the need is permanent, either salpingectomy or vasectomy may be performed. Temporary blockage of the spermatozoal route may be accomplished by the condom. Usually considered more acceptable to both partners for this purpose are the vaginal diaphragm and the cervical cap. Although these cannot be expected to contact the vaginal wall or the cervix tight enough to prevent the passage of so small a body as the spermatozoon, by lengthening the distance which must be traversed from the point of deposition to the os, they increase the duration of exposure to the mildly spermicidal acid secretions of the vagina. The protection given by a hard cervical cap fitting the cervix closely, sometimes worn throughout the intermenstrual period, is probably due to this increase in the spermatozoal route.

For greatest protection, diaphragms and caps should be reinforced by a spermicidal jelly or cream. The semisolid consistency of these materials gives them some obstructive power in addition to that of their chemical make-up. Because the jelly or cream used alone is a simpler method, some physicians consider them more acceptable, and they often are prescribed without mechanical reinforcement. Since the distance the spermatozoa must travel under such circumstances is shorter and the material may be pushed aside, jelly or cream alone presumably is less effective than when combined with the diaphragm.

For greatest reliability, a test of the clinical effectiveness of a contraceptive jelly or cream should be based on the protection secured by a large number of married couples over a number of years. This, however, is difficult to arrange and expensive to record and tabulate. Furthermore, the results are uncertain, since the number of omissions or incorrect uses of the material may not be accurately reported.

Laboratory tests to give indications of the probable effectiveness of contraceptive materials have been based on their two modes of action, the barrier effect and the immobilization of spermatozoa by the toxic ingredients. A partial index of the barrier action lies in the viscosity of the material, which can be measured and compared by the mobilometer, adapted for the purpose by Shedlovsky.[1]

---

[1] Shedlovsky, L.; Belcher, D.; Levenstein, I., and Bodner, H.: Changes on Aging in the Consistency of Some Commercial Contraceptive Jellies, Human Fertil. 8: 97 (Dec.) 1943.

Clinicians agree that the viscosity of a jelly or cream should be sufficient to prevent it from flowing out of the vagina and from too ready displacement from the os by coital thrusts. It must not, however, be so high as to keep it from flowing into the folds of the vaginal wall or from covering the cervix. Nor should the material be so solid as to constitute lumps lying in the vaginal cavity. These limits include a very wide range within which there is no indication of the values which are most effective clinically. It is hoped that future studies will define more accurately the most protective consistencies.

The power of contraceptive mixtures to immobilize spermatozoa through chemical action is more accessible to study. It is customarily estimated by observing the duration of motility after mixture with human semen. While this has resulted in much information regarding the concentrations of various substances and mixtures needed to immobilize in a given time, little is known regarding the mechanism by which this action occurs. Acids are known to stop motion of spermatozoa. This has led to the use of lactic acid, normally present in the vagina, in many contraceptive mixtures. The effectiveness of other mixtures depends on the action of compounds which have been found to be lethal to the sperms without damaging vaginal or urethral tissues. Glyceryl monoricinoleate, phenylmercuric acetate, ricinoleic acid, sodium lauryl sulfate and trioxymethylene are examples of these, and there are many others. Many of the detergents appear to have effective spermicidal action.

The time required to immobilize the spermatozoa in varying concentrations of many pure substances was determined by Voge.[2] Baker[3] measured the lowest concentration of chemical compounds which, when added to an equal volume of semen, would stop the motion of spermatozoa in 30 minutes. He described a procedure applicable to commercial contraceptive mixtures.[4]

Brown and Gamble[5] used a small quantity of semen (about 40 cu. mm.) for each test, thus allowing multiple comparisons with the same ejaculate. To permit time to differentiate between the more active and the less active materials, dilution was necessary, and they chose the arbitrary ratios of jelly, 1 part; 0.9% NaCl solution, 4 parts; and semen, 5 parts. To expose the spermatozoa to known concentrations, these components were completely mixed, as in most chemical procedures.

The test is unsatisfactory in two respects. It deviates from clinical conditions in that the complete mixing has no counterpart in coitus in which detumescense usually limits stirring after ejaculation. Although there is some dilution due to vaginal fluids, this is probably not uniform, and there is no way of estimating its range.

In spite of these imperfections, it appears reasonable to assume that low spermicidal times are correlated with clinical effectiveness. This test, therefore, has been applied to the contraceptive materials commercially available in the United States,[6] and results with samples secured in 1949 are reported herewith.

METHOD

One volume of contraceptive jelly or cream was mixed with four parts of 0.85% NaCl and kept over-night at 37 C to assure thorough mixing. Using the screw syringe of Richards described by Hudson and Mudd,[7] human semen was drawn into a glass tube of 1.6 mm. internal diameter. About 2 cm. was found to give a convenient volume for a ¾ in. cover glass. The semen was moved about 1 cm. from the end of the tube and the space it had previously occupied was then filled with diluted jelly or cream, a quantity of about 3% less than the semen. The two fluids were mixed on a microscope slide by rapidly forcing them out of the tube and drawing them back in about 30 times. A cover-glass was placed on the mixture and the slide slammed down on the laboratory desk several times to expel most of the air bubbles. These specimens were kept and examined at room temperature.

The preparations were examined with a microscope having a 16 mm. objective and a 10X eyepiece. They were illuminated with a 6 volt, 40 candlepower, clear-glass bulb of the type used for automobile headlights. This was placed 5 or 6 cm. from the specimen so that a line connecting the specimen and the light made an angle of 55 degrees or more with the axis of the microscope. To prevent overheating of the specimen on the microscope stage, a foot switch was provided so that the light was turned on only when needed.

The "spermicidal time" was measured as the time elapsing from mixing until the last visible motion of a spermatozoon. A final search was made for moving spermatozoa by examining each preparation by four passages across the coverslip. Because of the time required for the mixing and a survey of an adequate portion of the mixture, no attempt was made to differentiate times under 5 minutes. In these cases, the result was recorded as "5 minutes or less." If the spermatozoa were still active at the end of 4 hours, the time was recorded as 240+ minutes.

For an indication of the activity of the spermatozoa when tested with a reproducible spermicide, the time for immobilization in each specimen was recorded after the semen had been mixed with an equal quantity of 2.8% potassium acid phthalate.

MATERIALS

Semen was ejaculated into a glass vial and stored in an ice bath until used. When first ejaculated, the semen in many specimens was very viscous. It was not used, therefore, until 60 minutes after ejaculation.

The 11 donors were from 21 to 26 years of age, the average being 22. Specimens were collected not less than three days after a previous ejaculation.

An attempt was made to include all contraceptive jellies and creams available on the United States market. Many were sent by the manufacturers and others purchased through drug stores or mail order houses. For each material for which a spermicidal time of 30 minutes or less was reported, two or more tests were made of a tube secured through a clinic or a retail agency, and these were found to be approximately the same as the measurements originally obtained. While the tests of most of the active materials were limited to two tubes and of the less active to one, significant variations among different samples made from the same formula were rare in this or previous work. No claim is made that the results apply to all tubes bearing the same brand name.

Each manufacturer was asked for the composition of the materials being marketed at the time the samples were secured. The information received is given later in tabular form. The figures represent percentages of the ingredients, water, perfume, and coloring matter being omitted for conciseness.

RESULTS

The semen was mixed with the diluted jellies 1 to 5 hours (in most experiments 1 to 3 hours) after ejaculation. The average room temperature was 23 C. Each material was tested at least five times with five different donors. At least two of the tests were made by each author. The median of all tests made of each jelly or cream is given in the accompanying table.

For the four jellies all of whose times fell between the limits of 5 and 240 minutes, the standard deviation of one observation was 46 to 84% of the mean, the average being 67. The corresponding values for four creams were 23 to 38%, average being 30%.

The averages of the initial phthalate times and those measured after the final mixtures of a jelly or cream were 41± S.D. 3 minutes and 30± S.D. 2 minutes.

Of the materials reported herewith, 20 had been tested in the previous series of 1946.[6d] For 14 of these, the spermicidal times found in the two series are in substantial agreement. To La

---

2. Voge, C. I. B.: The Chemistry and Physics of Contraceptives, London, Cape, 1933.

3. Baker, J. R.: The Chemical Control of Conception, London, Chapman & Hall, Ltd., 1935.

4. Baker, J. R.; Ranson, R. M., and Tynen, J.: Spermicidal Powers of Chemical Contraceptives: Approved Tests, J. Hyg. **37**: 474 (July) 1937.

5. Brown, R. L., and Gamble, C. J.: (*a*) A Method of Testing the Relative Sperimicidal Effectiveness of Contraceptives, and Its Application to Ten Commercial Products, Human Fertil. **5**: 97 (Aug.) 1940; (*b*) The Comparative Spermicidal Powers of Fifteen Commercial Contraceptives, ibid. **6**: 1 (Feb.) 1941; (*c*) Studies of Spermicidal Times of Contraceptive Materials, ibid. **8**: 9 (March) 1943.

6. (*a*) Brown and Gamble.[5] (*b*) Brown, R. L.; Levenstein, I., and Becker, B.: The Spermicidal Times of Samples of Commercial Contraceptives Secured in 1942, Human Fertil. **8**: 65 (Sept.) 1943. (*c*) Becker, B., and Gamble, C. J.: The Spermicidal Times of Samples of Commercial Contraceptives Secured in 1943, Human Fertil. **9**: 6 (March) 1944. (*d*) The Spermicidal Times of Contraceptive Jellies and Creams, 1946, ibid. **11**: 111 (Dec.) 1946.

7. Hudson, C. L., and Mudd, S.: Ultramicro Technic for Precipitation and Agglutination Reactions, J. Immunol. **28**: 311 (April) 1935.

Savoy with a lower time in 1949, new ingredients have been added. For three others, Bilco Cream and Jelly, and Locorol, information regarding the formulas was incomplete. For L.A.J., with no change in formula except an increase in aminoacetic acid, the longer spermicidal time is unexplained, as is also the shorter time of Warner Creme with an identical formula.

Of the materials examined, 69% were found to inactivate the spermatozoa within the limit of 30 minutes set by the Council on Pharmacy and Chemistry as one of the criteria for acceptance for *New and Nonofficial Remedies*[8] and 56% immobilized the spermatozoa within 5 minutes or less. These proportions are approximately the same as those found in 1946.

A Change in Spermicidal Time with Age of the Contraceptive Material.—Two months after it had been manufactured the spermicidal time of one sample of a batch of jelly was found in three tests to be five minutes or less, but another tube obtained subsequently through a contraceptive clinic showed a time of 240+ minutes. In view of this discrepancy, tubes of the original lot were submitted to further tests. Three of these after 11 months at room temperature (average 23 C) had median times of 8, 26, and 27 minutes. However, the original tube as well as three others of the same lot kept at room temperature, six at 37 C and four at 45 C all for 11 months, showed spermicidal times of more than 4 hours. Similarly long spermicidal times were found for three small sample tubes received in 1949 and stored at room temperature for 11 months and for two tubes received in 1948 and kept for 24 months. Nevertheless, a tube purchased in 1946 with an age of 42 months had a time of less than 5 minutes. The formula given for the 1946 material contained 0.05% phenylmercuric acetate; those for 1948 and 1949, 0.02%.

Median Spermicidal Times by the Method of Brown and Gamble in Contraceptive Jellies and Creams Secured in 1949

Five Minutes or Less

Arc Jelly
Bilco Cream
Certane Creme
Colagyn
Contra Creme (Contra Creme and Diaphragm Co.)
Cooper Creme
Cooper Creme Gel
Eugenic Creme
Fidelity *
Jellak
Koromex Cream
Koromex Jelly
Lactikol Creme
Lactikol Jelly
Lanteen Jelly
Linton Cream
Lorophyn
Lygel Jelly
Marvosan Creme
Marvosan Jelly
Metakol
Nixon Creme
Obegyne
Ortho-Creme
Ortho-Gynol
Penetrox
Prentif
Ramses
Sanité
Vagagill
Vajon
Veritas Kreme
Volpar Paste
Warner Creme
Zylactic *

Product	Min.	Product	Min.
Verithol	6	Femo-gene	87
Caprokol	7	Arc Creme *	91
Oxy-Zem	7	Gelacreme	97
Gelaquin	10	Servex *	219
i-Cream	10	Boro-Pheno-Form	240+
i-Jel	10	Contra (Sutliff & Case) ‡	240+
anteen Creme	12	Gelakta	240+
La Savoy	30	Glyeuthymenol	240+
Lorcorol	34	L. A. J.*	240+
Stillman's Jell *	36	Linton Jelly	240+
V. A. Jelly	39	Medi-Phragm *	240+
Safex	49	Murax	240+
Bilco Jelly	70	Special Formula 513	240+
Creemoz *	70		

*The manufacturer has informed us that a new formula is being prepared.

‡ The manufacturer has informed us that the production of this material has been discontinued.

That the variations were not due to random errors in the determinations was indicated by the fact that no sample showed a significantly lower time in a later test.

The manufacturer suggested that the changes may have been because tubes tested were inadvertently filled without the internal wax coating customarily used. Since this may have been a factor and, if so, is one which the maker states is no longer present, the median time for this jelly is not included in the accompanying table.

A review of 12 other materials in this series which contained phenylmercuric compounds showed no significant increase in spermicidal times on being kept 3 to 11 months. However, one of them, Murax, containing 0.02% of phenylmercuric acetate, showed a time of 240+ upon receipt.

In an earlier study,[5c] it was found that 18 contraceptive materials showed no significant change in spermicidal times after storage for a year at room temperature, and that the spermicidal times of only 4 out of 42 maintained 11 months at 37 C showed significant variations. In view of the change described above it was decided to review the contraceptive materials secured in 1946. Spermicidal times were accordingly determined with materials from the same tubes used 3½ years earlier for the tests reported in the previous publication.[6d] These had been kept at room temperature of about 23 C. Each was tested by each author with semen from three or more different donors. Additional tests were made of those for which the times were found to have changed. Substantially the same spermicidal times were found for Bilco Cream, Certane Creme, Clinicol, Contra Creme, Contragene, Cooper Creme, Hyva, Koromex Cream and Jelly, Lactikol Creme and Jelly, La Savoy, Lorophyn, Marvosan Creme and Jelly, Ortho-Creme, Ortho-Gynol, Planpar, P.S. Cream and P.S. 25% Glycerin Jelly. Bilco Jelly and L.A.J. had changed from 128 minutes in the 1946 test to 240+ in 1950. Lygel Jelly, for which the time was less than 5 minutes in 1946, was found to have a time of 240+. Lygel Cream had increased from 19 to 68 minutes. Locorol and Warner's Cream could not be tested because they had separated into solid and liquid portions. The samples of Lanteen Jelly and Ramses had been exhausted in the previously published tests and, since no further use was anticipated at that time, had not been replaced. A sample of Ramses which the manufacturer had kept at room temperature since its manufacture in 1946, was found in 1950 to have a spermicidal time of 5 minutes or less, the same as that found in the 1946 review.

These results show that most of the materials had retained their spermicidal activity through a 3½ year period, a much longer time than their usual shelf-life as customarily distributed to the public. Since no significant change was noted in the spermicidal times of four of the materials which contained phenylmercuric acetate, Contra Creme, Koromex Cream and Jelly, and Lorophyn, there is no indication that the changes described in the samples of one jelly were connected with this compound.

One manufacturer sent a 2 ounce tube of contraceptive jelly which he said contained radium. When measured with a Geiger-Mueller counter, it was found to contain the equivalent of 0.89 micrograms of radium. Serious results have been known to follow when as much as 5 micrograms of radium have been absorbed into the body. Although absorption from the vagina is incomplete, it seems unwise to employ such a material in a contraceptive which will be repeatedly used.

The same manufacturer offers suppositories weighing 1.75 gm. and containing 0.05 micrograms of radium, and an ointment with 0.66 micrograms of radium per ounce. The same objection also applies to these.

The results given are only an indirect indication of the protection from pregnancy which is to be expected from the materials examined. The protection is based on the immobilization of sperms after mixing with the spermicide which is correlated with clinical contraceptive effectiveness by *a priori* reasoning rather than a tested relationship. It does not take into account the consistency of the contraceptive material which is an important factor.

SUMMARY

Clinical contraception is accomplished by obstruction to the passage of the spermatozoa as in sterilization or use of the condom, by a lengthening of the route which the spermatozoa must travel as with a diaphragm or cervical cap, or by a combination of obstruction and chemical action as furnished by contraceptive jellies or creams.

Estimation of the effectiveness of contraceptive materials by clinical trials is difficult because of unreported omissions. Laboratory tests, designed to give indications of clinical effectiveness, have been based on the viscosity of the material and on the time required for immobilization of the spermatozoa after mixing with the spermicide.

---

[8] New and Nonofficial Remedies 1950, Philadelphia, J. B. Lippincott Co., 1951, p. xxxi.

Spermicidal times, determined by the procedure of Brown and Gamble (which requires dilution and mixing) are given for samples of 62 commercial contraceptive mixtures secured in 1949. These vary from less than 5 to more than 240 minutes.

ADDENDUM

1. Complete quantitative formulas were supplied by the manufacturers for the following products:

Arc Creme	%
Trioxymethylene U. S. P.	0.038
Phenol U. S. P.	0.33
Rhodinol	0.05
Beta naphthol	0.05
Sodium benzoate	0.05
Boric acid U. S. P.	0.05
Alcohol, ethyl U. S. P.	0.53
Sodium hydroxide U. S. P.	0.18
Potassium hydroxide U. S. P.	1.20
Glycerin U. S. P.	6.37
Stearic acid T. P.	24.42

Arc Jelly	
Alkyl (cetyl) dimethyl benzyl ammonium chloride	0.25
n-Butyl-p-hydroxybenzoate	0.02
Boric acid U. S. P.	0.95
Alcohol U. S. P.	5.15
Gum. tragacanth U. S. P.	3.75
Glycerin U. S. P.	11.70

Caprokol Jelly	
Hexylresorcinol	0.1
Glycerin U. S. P.	5.0
Alcohol U. S. P.	5.0
Tragacanth powder	1.5
Quince seed	0.5

Colagyn	
Zinc sulfocarbolate	0.5
Lactic acid	1.0
Potassium oxyquinoline sulfate	0.16
Boric acid	0.5
Tragacanth	4.1
Glycerin	10.0

Contra Creme (Contra Creme & Diaphragm Co.)	
Phenylmercuric acetate	0.062
Triethanolamine	0.062
Glycerin	2.6
Glycol monostearate	3.6
Stearic acid	12.5

Cooper Creme	
Trioxymethylene U. S. P.	0.04
Dioctyl sodium sulfosuccinate	0.50
Hydrous aluminum silicate	2.34
Trihydroxyethylamine	7.91
Sodium oleate	0.67
Stearic acid	23.04

Cooper Creme Gel	
Trioxymethylene U. S. P.	0.04
Lactic acid	0.09
Dioctyl sodium sulfosuccinate	0.50
Sodium oleate	0.67
Trihydroxyethylamine	10.50
Cellulose gum	11.00

Creemoz	
Trioxymethylene U. S. P.	0.038
Phenol U. S. P.	0.33
Rhodinol	0.05
Beta naphthol	0.05
Sodium benzoate	0.05
Boric acid U. S. P.	0.05
Alcohol, ethyl U. S. P.	0.53
Sodium hydroxide U. S. P.	0.18
Potassium hydroxide U. S. P.	1.20
Glycerin U. S. P.	6.37
Stearic acid T. P.	24.42

Eugenic Creme	
Duponol C	0.025
Triethanolamine	1.4
Methyl-p-hydroxybenzoate	0.2
Sodium borate	0.1
Sodium stearate	6.0
Glycerin	4.0
Stearic acid	20.0
Oleic acid	0.15

Jellak	
Alkyl (cetyl) dimethyl benzyl ammonium chloride	0.25
n-Butyl-p-hydroxybenzoate	0.02
Boric acid U. S. P.	0.95
Alcohol U. S. P.	5.15
Gum tragacanth U. S. P.	3.75
Glycerin U. S. P.	11.70

Koromex Creme	
Phenylmercuric acetate	0.02
Oxyquinoline benzoate	0.02
Boric acid	2.0
Butyl-p-hydroxybenzoate	0.02
Sorbitan monoleate	5.0
Polyoxyalkalene sorbitan monostearate	3.0
Cetyl alcohol	1.0
Stearic acid	20.0
Glycerin	5.0

Koromex Jelly	%
Phenylmercuric-acetate	0.02
Oxyquinoline benzoate	0.02
Boric acid	2.0
Butyl-p-hydroxybenzoate	0.02
Glycerin	10.0
Gum acacia	0.6
Tragacanth	2.5

Lacktikol Creme	
Glyceryl monoricinoleate	1.5
Lactic acid	0.5
Stearic acid	15.0
Sodium lauryl sulfate	0.6
Glyceryl monostearate	7.5
Glycerin	8.0

Lacktikol Jelly	
Glyceryl monoricinoleate	1.0
Lactic acid	1.5
Oxyquinoline sulfate	0.05
Butyl-p-hydroxybenzoate	0.02
Sodium lauryl sulfate	0.2
Glycerin	8.0
Tragacanth	2.7
Karaya	1.0
Acacia	1.0

L. A. J.	
Lactic acid	1.5
Aminoacetic acid	0.1
Boric acid	1.0
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Lanteen Creme	
Chlorothymol	0.0066
Sodium benzoate	0.172
Glycerin	5.0
Oleic acid	7.6
Stearic acid	15.2
Potassium hydroxide	0.95

Lanteen Jelly	
Ricinoleic acid	0.50
Hexylresorcinol	0.10
Chlorothymol	0.0077
Sodium benzoate	0.20
Glycerin	16.13
Tragacanth	1.73
Starch	0.97
Calcium hydroxide	0.0264
Hydrochloric acid to adjust pH to 5.2	

Linton Cream	
Paraformaldehyde	0.1
Triethanolamine	0.9
Potassium carbonate	0.2
Paraffin	2.0
Stearic acid	22.0

Linton Jelly	
Lactic acid	1.5
Boric acid	4.0
Glycerin	7.7
Starch	8.0
Gum karaya	1.33

Lorophyn	
Phenylmercuric acetate	0.05
Polyethylene glycol of monoisooctylphenyl ether	0.3
Sodium borate U. S. P.	3.0
Methyl-p-hydroxybenzoate	0.05
Gum tragacanth	1.8
Purified Irish moss	1.2
Glycerin	8.0

Marvosan Creme	
Paraformaldehyde	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Sodium oleate	0.5
Glycerin	6.3
Stearic acid	29.8
Propylene glycol	5.1
Triethanolamine	1.96

Marvosan Jelly	
Lactic acid	1.5
Oxyquinoline sulfate	0.2
Aminoacetic acid	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Boric acid	1.0
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Medi-Phragm	
Trioxyethylene	0.1
Lactic acid	0.5
Methyl-p-hydroxybenzoate	0.2
Algin	2.7
Corn starch	2.0
Glycerin	10.0
Pectinum N. F.	0.5
Sodium hydroxide	0.25

Metakol	%
Sodium lauryl sulfate	0.2
Nonaglycol monolaurate	1.0
Glyceryl monoricinoleate	1.0
Boric acid	3.0
Glycerin	7.0
Gum tragacanth	2.0
Gum karaya	1.0
Gum arabic	0.5

Murax *	
Phenylmercuric acetate	0.02
Propylene glycol	12.0
Polyoxyalkylene sorbitan monooleate	0.3
Lactic acid	0.3
pH 4.4-4.6	

Obegyne	
Lactic acid	1.5
Oxyquinoline sulphate	0.05
Nonaethylene glycol monolaurate	3.0
Butyl-p-hydroxybenzoate	0.02
Glycerin	7.0
Tragacanth	2.0
Karaya	3.0
Acacia	0.5

Ortho-Creme	
Ricinoleic acid	0.75
Boric acid	2.0
Cetyl alcohol	0.5
Sodium lauryl sulfate	0.28
Triethanolamine	0.25
Glycerin	8.0
Stearic acid	24.0

Ortho-Gynol	
Ricinoleic acid	0.75
Boric acid	3.0
Oxyquinoline sulfate	0.025
Propyl-p-hydroxybenzoate	0.05
Glycerin	5.0
Acacia	2.0
Tragacanth	3.0

Oxy-Zem	
Lactic acid	0.1
Oxyquinoline sulfate	0.025
Boric acid	3.0
n-Butyl-p-hydroxybenzoate	0.05
Glycerin	5.0
Tragacanth	3.0
Acacia	2.0

Ramses	
Dodecaethylene glycol monolaurate	5.0
Boric acid as borate buffer PH 7.8	1.0
Alcohol	5.0
Butyl-p-hydroxybenzoate	0.02
Carboxymethyl cellulose	2.5
Glycerin	7.0

Sanité Jelly	
Ricinoleic acid	0.7
Lactic acid	1.0
Oxyquinoline sulfate	0.05
Boric acid	3.0
Butyl-p-hydroxybenzoate	0.05
Glycerin	10.0
Acacia powder	2.0
Tragacanth ribbon	2.75

Servex	
Sodium phenylmercuric nitrate	0.0161
Lactic acid	0.85
Sodium biborate	0.583
Boric acid	0.85
Benzoic acid	0.106
Cocoanut oil soap	1.27
Gum Visco E	6.52

Stillman's Medicated Jell	
Lactic acid	1.0
Oxyquinoline sulfate	0.1
Methyl-p-hydroxybenzoate N. F.	0.05
Boric acid	1.13
Gum tragacanth	0.6
Starch (corn)	5.63
Glycerin	54.12

Vagagill	
Phenylmercuric nitrate	0.02
Phenol	0.236
Oxyquinoline sulfate	0.087
Boric acid	1.63
Sodium borate	0.025
Locust bean gum	1.0
Tragacanth	2.25
Glycerin	32.0

V. A. Jelly	
Citric acid	1.0
Oxyquinoline citrate	0.1
Boric acid	2.0
Methyl cellulose	2.4
Propylene glycol	15.0

Veritas Kreme	%
Paraformaldehyde	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Propylene glycol	5.4
Triethanolamine	1.96
Sodium oleate	0.5
Stearic acid	29.8
Glycerin	6.3

Verithol	
Lactic acid	1.5
Aminoacetic acid	0.1
Oxyquinoline sulfate	0.2
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Boric acid	1.0
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Warner Creme	
Chlorthymol	0.09
Lactic acid	0.35
Oxyquinoline sulfate	0.03
Boric acid	2.71
Gelatin	0.86
Glycerin	22.96
Karaya gum	0.86
Starch	5.16

Zylactic	
Lactic acid	0.2
Oxyquinoline sulfate	0.25
Propyl-p-hydroxybenzoic acid	0.09
Boric acid	3.0
Glycerin	10.0
Algin	1.0
Methyl cellulose	1.5

2. For the following products the manufacturers gave quantitative formulas, which appear complete except for the jelly-forming material:

Bilco Cream	%
Lactic acid	1.4
Oleic acid	1.4
Citric acid	0.1
Triethanolamine	1.4
Methyl-p-hydroxybenzoate	0.075
Propyl-p-hydroxybenzoate	0.075
Glyceryl monostearate base	...

Bilco Jelly	
Lactic acid	1.0
Boric acid	4.0
Methyl-p-hydroxybenzoate	0.075
Propyl-p-hydroxybenzoate	0.075
Vegetable gum base	...

La Savoy Jelly	
Lactic acid	4.15
Chlorothymol	0.01
Oxyquinoline sulfate	0.06
Boric acid	0.26
Butyl-p-hydroxybenzoic acid	0.02
Glycerin	63.0
Tragacanth and glycerite of starch	...

Lygel Jelly	
Benzalkonium chloride	0.1
p-tert. amylhydroxy benzene	0.05
p-Chloro-m-dimethylhydroxy benzene	0.05
Lactic acid	0.25
Glycerol	15.0
Gum tragacanth and pectin	3.5

3. Partial formulas were furnished by the manufacturers for the following:

Nixon Creme †	%
Phenylmercuric borate	0.0175
Oxyquinoline sulphate	0.08
Triethanolamine	...
Propylene glycol monostearate	...
Stearic acid	...
Glycerin	...

Prentif	
Hexylresorcinol	0.1
Glycerin	11.5
Tragacanth	2.5
Tartaric and citric acids sodium tartrate sodium citrate	1.5
Methyl-p-hydroxybenzoate	0.15

Uni-Cream ‡	%
Phenylmercuric acetate	0.02%
Oxyquinoline benzoate	0.02
Boric acid	2.0
(in emulsion of stearic acid, cetyl alcohol, glyceric, perfume and deionized water)	

---

* Murax is advertised for cervicitis and vaginitis, not as a spermicide.

† Formula copied from tube. No reply was received to a letter asking permission to publish a more complete formula.

4. For the following products, the available information was limited to the "active ingredients":

- Boro-Pheno-Form ‡
  - Zinc phenolsulphonate
  - Hexamethylenamine
  - Zinc sulphate
  - Salicylic acid
  - Boric acid
  - Quinine sulphate
  - Cinchona bark red
- Certane Cream §
  - Sodium sulfo dioctyl succinate
  - Chlorthymol
    - (in a specially prepared stearate base)
- Contra (Sutliff & Case)
  - Lactic acid and boric acid
    - (in a glycerinated base)
- *Fidelity* §
  - Ricinoleic acid
  - Lactic acid
  - Resorcinol
  - Boric acid
    - (in a special water soluble cohesive base)
- Gelacreme ‡
  - Lactic acid and boric acid
    - (in a buffered stearic acid emulsion base)
- Gelakta ‡
  - Lactic acid
  - Boric acid
- Gelaquin ‡
  - Lactic acid
  - Oxyquinoline benzoate
  - Boric acid
- Glycuthymenol ‡
  - Lactic acid
  - Zinc sulfate
  - Sodium benzoate
    - (in a glycerinated base aromatized with eucalyptol, thymol, menthol, methyl salicylate)
- Locorol ‡
  - Potassium oxyquinoline sulphate
  - Boric, acetic, and tartaric acids
  - Glycerin
    - (in a vegetable gum base)
- Penetrox ‡
  - Phenylmercuric borate
  - Lactic acid
  - Oxyquinoline sulphate
  - Boric acid
    - (glycerin, karaya gum, rose oil perfume, baume syrup)
- *Safex* ‡
  - Lactic acid
  - Oxyquinoline benzoate
  - Resorcinol
  - Boric acid
  - Glycerin
  - Tragacanth
- Special Formula 543 ‡
  - Lactic acid
  - Boric acid
  - Glycerin
  - Tragacanth
- Uni-Jel ‡
  - Trioxymethylene 0.04%
  - Sodium oleate 0.07%
- Volpar Paste
  - Phenylmercuric acetate 0.03%

---

‡ Formula copied from tube. No reply was received to a letter asking permission to publish a more complete formula.

§ *Formula copied from tube. Permission to publish a more complete formula was refused.*

5. No information regarding ingredients was available for Femogene or Vajon.

COMMITTEE ON COSMETICS

The following products have been accepted as conforming to the Rules of the Committee on Cosmetics. A copy of the rules on which the Committee bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

John H. Breck, Incorporated

Breck Baby Lavo—A heavy-bodied, light amber-colored liquid consisting of a perfumed water solution of a non-caustic organic base soap, intended as a skin cleanser and shampoo for babies. (Bottle: 4 oz., pint, quart, and gallon.)

Consolidated Royal Chemical Corporation

Krank's Brush Lather Shave—A lightly perfumed white cream consisting of fatty acids, sodium and potassium hydroxide, a surface active agent, glycerin, boric acid, and stabilizers, intended to soften the beard and facilitate shaving. (Tubes: 2 and 4½ oz. Jars: 8 and 16 oz.)

Krank's Brushless Shave Kreem—A lightly perfumed white cream consisting of stearic acid, petrolatum, lanolin, a surface-active agent, glycerin, and potassium hydroxide, intended to soften the beard and facilitate shaving. (Tubes: 1½ and 4½ oz. Jars: 8 and 16 oz.)

Cosmetic Laboratories, Incorporated

Beauty Counselor's Compact Powder—A very fine compressed powder mixture of talc, chalk, and kaolin pigmented with oxides, intended to give a smooth appearance to the skin and enhance its color. (Plastic case: ½ oz.)

Beauty Counselor's Dry Rouge—A compressed cake of fine mineral ingredients with certified organic and inorganic pigments. Intended to enhance the natural color of the cheeks. (Plastic case: ½ gm.)

Beauty Counselor's Lipstick—A solid waxy mass consisting of certified colors, waxes, and vegetable and mineral oils. Intended to stain, cover, and color the lips. (Tube: 4.1 gm., 3.3 gm., and 3.0 gm.)

Beauty Counselor's Mascara—A solid waxy cake containing essentially waxes, alkanol amine soaps, pigments, and a tack producing agent. Readily applicable with water and brush. Intended to enhance the color of lashes and brows. (Plastic case: 3 gm.)

The Dermo Company

Casil Protective Skin Creme—A suspension of colloidal silicate and casein in soap, intended to serve as an industrial protective skin cream by coating the skin with an invisible film which is resistant to oils, dirt, grease, paint, pigments, and other industrial irritants. (Can: 5 lb.)

Luzier's Incorporated

Luzier's Nail Enamel—A clear or opaque pigmented lacquer containing a sulfonamide resin, nitrocellulose in acetate, a plasticizer, and alcohol solvent, intended to enhance the color of the nails. (Bottle: ½ oz.)

Luzier's Suntan Lotion—A light reddish-tan liquid emulsion consisting of a vegetable oil, cetyl alcohol, distilled water, ammonium lauryl sulphate, perfume, coloring, and digalloyl trioleate compound as a screening agent. The lotion is intended to protect the skin from the erythemogenic rays of the sun and to permit tanning. (Bottle: 4 fl. oz.)

Marrow's, Incorporated

Mar-O-Oil Regular Shampoo—A perfumed colored liquid nonfoaming shampoo, containing a sulfated vegetable oil, a fatty acid, mineral oil, and a preservative, intended to cleanse the hair and scalp. (Bottle: 6, 14, and 32 oz.)

Mar-O-Oil Super Foamy Shampoo—A perfumed colored liquid foaming shampoo, containing organic and inorganic salts of sulfated fatty acids, intended to cleanse the hair and scalp. (Bottle: 6, 14, and 32 oz.)

Materna Products, Incorporated

Materna Cream—A firm white cream containing cocoa butter, lanolin, and boric acid in an emollient base, intended to soften and lubricate the skin. (Jar: 3 oz.)

Maternity Cosmetics

Marion Phillips Soap—A blue-green tallow and cocoanut oil perfumed soap, superfatted with lanolin, intended to cleanse the skin when a bland soap is desired. (Cake: 83 gm.)

McKesson and Robbins, Incorporated

Tawn Shaving Bowl—A white shaving soap consisting of a cocoanut oil, tallow, stearic acid, glycerin, lanolin, and alcohol, pigment and perfume, intended to soften the beard and to facilitate shaving. (Case: 3⅛ oz.)

Northam Warren Corporation

Cutex Nail Polish—A clear or opaque and colored, viscous lacquer containing a sulfonamide resin, nitrocellulose and plasticizers in alcohol and acetate solvents intended to enhance the color of the nails. (Bottle: ¼ fl. oz. and ⅖ fl. oz.)

Cutex Lipstick—A smooth mixture of oils, waxes, and emollient substances together with colors and pigments intended to enhance the color of the lips. (Tube: 3.0 or 3.5 gm.)

Cutex Pearl Brilliance—An opaque, colored, viscous lacquer containing natural pearl essence, a sulfonamide resin, nitrocellulose, and plasticizers in alcohol and acetate solvents intended to enhance the color of the nails. (Bottle: ¼ fl. oz. and ⅖ fl. oz.)

Cutex Oily Cuticle Remover—A slightly perfumed dilute potassium hydroxide solution containing soluble oil and propylene glycol intended to soften the cuticle and permit its removal by gentle rubbing. (Bottle: 0.5 fl. oz.)

Cutex Lotion Polish Remover—A mixture of solvents containing natural oil and lanolin intended to remove nail polish from the nails. (Bottle: 2.90 fl. oz.)

Revlon Products Corporation

Revlon Lipstick—A hypoallergenic, firm, waxy mixture, containing lanolin, various waxes, oils, colors, and perfume, intended to enhance the color of the lips. (Tube: 4½ gm.)

Revlon Aquamarine Lotion—A hypoallergenic aquamarine-colored and scented emulsion containing lanolin derivatives and oils, for relieving dryness of the skin. (Bottle: 5 and 16 oz.)

Revlon Face Powder—A hypoallergenic, finely pulverized scented powder, consisting essentially of talc, zinc stearate, and pigments, intended to reduce the shine of the skin on the face. (Box: 2 and 3 oz.)

Richard Hudnut Company

Richard Hudnut Home Permanent

Creme Waving Lotion—A pink opaque perfumed solution of ammonium thioglycollate, containing a surface-active agent and an opacifier. (Bottle: 4 fl. oz.)

Neutralizer—A pink powder composed chiefly of potassium bromate. Intended to be used at specified intervals to arrest the chemical action of the waving solution. (Package: 0.5 av. oz.)

The Toni Company

Permafix—A white powder, composed of sodium perborate and sodium hexametaphosphate, which forms a translucent solution when dissolved in water. Intended to be used at specified time intervals to arrest the chemical action of the waving solution. (Package: 5.2 and 5.8 gm.)

Texas Pharmacal Company

Allercreme Body Lotion—A hypoallergenic, thick white liquid, perfumed or unperfumed emulsion of the oil-in-water type containing lanolin derivatives, petrolatum, a stearate, an alcohol, a surface-active agent and water, intended as a skin emollient. (Bottle: 8 fl. oz.)

Vanpelt and Brown, Incorporated

VB Lotion—A pink-colored, perfumed liquid emulsion consisting of quince seed, stearic acid, a surface-active agent, an alcohol, wool fat, a demulcent, coloring agents, and a preservative, intended to soften and to protect the skin. (Bottles: 3 fl. oz. and 1 gal.)

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Elsewhere in this issue appears the program for the Forty-Eighth Annual Congress on Medical Education and Licensure, to be held at the Palmer House, Chicago, Feb. 10-12, under the sponsorship of the Council on Medical Education and Hospitals.

This year's program provides an unusual variety of papers and discussions on subjects of general and current importance in medical education. Of particularly wide interest will be the presentation by the director of the newly organized National Science Foundation of the foundation's program and plans. With the growing interest in the preceptorship as a part of the medical school curriculum, the panel on the place of the preceptorship in undergraduate medical education should provoke discussion of the value of this educational method.

The distribution of physicians will be analyzed in a report of a study of graduates of all American medical schools over a span of 25 years.

With regional plans for medical education receiving increasing attention in many parts of the country, the report of the experiences of the Southern Regional Program initiated four years ago will be helpful to many.

Graduate medical education will be considered by two panels, one discussing the standards for the approval of residency training programs, the other the problem of the internship and residency as related to medical licensure. The subject of medical education in other countries will be represented this year by a paper outlining plans for an international conference on medical education and by a report on American students in foreign medical schools.

The congress is an open meeting, at which physicians and others interested in medical education are welcome. Reservations should be made with the hotel at the earliest possible date.

INFECTION DUE TO CHROMOBACTERIA

Chromobacteria are non-spore-forming, aerobic bacilli, motile and usually gram-negative. They were considered saprophytic organisms of a rather ubiquitous distribution. They grow readily on ordinary mediums and produce pigment that develops only in the presence of oxygen and is most abundant on the primary culture. According to Topley and Wilson,[1] the chief member of the group producing a violet pigment is Chromobacterium violaceum, that of the group producing pink and red pigment is Chromobacterium prodigiosum (Serratia marcescens), and that of the group producing yellow or orange pigment is Chromobacterium aquatilis. Chromobacterium prodigiosum was first demonstrated by Bartolomeo Bizio in 1823 as a cause of "bleeding polenta." He considered the causative organism a fungus and gave it the name Serratia marcescens.

Woodward and Clark,[2] in 1913, reported the first human infection in a patient with chronic, nonfatal pulmonary disease. The sputum of the patient was not bloody but contained organisms which on culture proved to be red-pigmented gram-negative bacilli. Rosahn and Hu [3] demonstrated the pathogenicity of several strains of chromobacteria in various animals. Black and Shahan [4] reported diffuse skin lesions and enlarged inguinal lymph nodes in a boy 6 years old. Smears from the lesions showed a slender, gram-negative bacillus which on agar cultures produced deep violet colonies. The pigment was slightly soluble in water and quite soluble in alcohol. Aronson and Alderman [5] recovered from the spinal fluid of a patient with cerebral spinal meningitis an organism that presented the cultural and biochemical characteristics of Serratia marcescens. The culture was pathogenic for mice, rats, rabbits, hamsters, and turtles and produced a labile hemolysin. Cultures of this organism showed variations in colonial characteristics and in the production of pigment. Schattenberg and Harris [6] described in 1941 a fulminant, fatal infection caused by Chromobacterium violaceum in man. This patient had septicemia. The micro-organisms were recovered post mortem from various visceral lesions.

Wheat and associates [7] report, in a recent communication, 11 cases of infection by chromobactéria observed during a period of six months. The infection in these patients was recognized and the organism first recovered after some type of urinary tract manipulation, such as catheterization, cystoscopy, and genitourinary surgical treatment. In all cases the organism was present in the urine in large numbers, and in two cases it was recovered from the blood. Fatal endocarditis developed in one of the patients. The organism in these cases was probably introduced by the instrumentation of the urinary tract. The antibiotics had no effect on the chromobacteria either in vitro or in vivo. The authors felt that the use of multiple antibiotics, which eliminated all the usual organisms responsible for infection of genitourinary organs, permitted the ready implantation of the highly antibiotic-resistant and sulfonamide-resistant Chromobacterium. It seems likely that the usually saprophytic bacterium may become pathogenic as the result, at least in part, of the increased use of antimicrobial agents.

---

1. Topley, W. W. C., and Wilson, G. S.: Principles of Bacteriology and Immunity, Ed. 2, Baltimore, William Wood & Company, 1936, pp. 493-503.
2. Woodward, H., and Clark, K.: A Case of Infection in Man by the Bacterium Prodigiosum, Lancet **1**: 314, 1913.
3. Rosahn, P., and Hu, C.: Pathogenicity of Serratia Marcescens (Bacillus Prodigiosus), Proc. Soc. Exper. Biol. & Med. **30**: 1326, 1933.
4. Black, M. E., and Shahan, J.: Bacillus Violaceus Infection in a Human Being, J. A. M. A. **110**: 1270 (April 16) 1938.
5. Aronson, J. D., and Alderman, I.: The Occurrence and Bacteriological Characteristics of S. Marcescens from a Case of Meningitis, J. Bact. **46**: 261 (Sept.) 1943.
6. Schattenberg, H.; and Harris, W. H.: A Definite and Unique Occurrence of Rapidly Fatal Infection Caused by Bacillus Violaceus Manilae, J. A. M. A. **117**: 2069 (Dec. 13) 1941.
7. Wheat, R. P.; Zuckerman, A., and Rantz, L. A.: Infection Due to Chromobacteria: Report of Eleven Cases, A. M. A. Arch. Int. Med. **88**: 461 (Oct.) 1951.

EMERGENCY WOODEN RESPIRATORS

On Nov. 30 *Popular Mechanics* magazine, in cooperation with the U. S. Junior Chamber of Commerce, launched a campaign to place in every community in the country an inexpensive wooden respirator for the emergency treatment of patients with poliomyelitis. These respirators are to be constructed by local craftsmen or manual training classes, from material available in ordinary lumber yards, hardware stores, and garages or machine shops, and from plans made available by *Popular Mechanics*. The respirators are patterned after the one described in the Feb. 17, 1951, issue of THE JOURNAL [1] and in a descriptive pamphlet, obtainable from the Council on Physical Medicine and Rehabilitation of the American Medical Association. Because of its low cost, the emergency unit is expected to be within the reach of communities that cannot afford a conventional "iron lung." It is not, however, intended as a substitute for the conventional respirator, since it lacks the efficiency and durability of the latter. It is to be used only as a temporary emergency aid until a standard respirator can be obtained. Since the National Foundation for Infantile Paralysis can fly a standard respirator to any part of the country within a matter of hours, there should be no need for prolonged use of the emergency units. The sponsors of the plan feel, however, that in an emergency the instant availability of a respirator may be life-saving.

This is a humanitarian enterprise for which *Popular Mechanics* and the Junior Chamber of Commerce are to be commended. Great caution must be urged, however, in the execution of such a plan. Wooden respirators of this type that are properly constructed and properly supervised in use are effective and safe for short-term operation. Poorly constructed and operated by inexperienced personnel, they may be completely ineffective and their use might conceivably delay the institution of adequate therapy to the point of danger or even fatality. The following precautions are essential to the safe use of these respirators: 1. They must be built by an exceptionally good mechanic. Units built by semi-skilled local carpenters and tinsmiths may not be adequate in an emergency. 2. Their use should be supervised by personnel familiar with both the mechanical and the medical aspects of respirator operation and capable of coping instantaneously with mechanical breakdown. 3. They should be tested by qualified persons before being put into emergency operation and at three to four week intervals as long as the apparatus remains idle. Airtightness, degree of vacuum obtainable, rate of alternation of pressures, and mechanical readiness should be checked regularly as well as the integrity of the rubber gaskets during storage. The machine should be capable of developing negative pressures of 10 to 20 cm. of water and should complete 12 to 20 cycles of alternate negative and positive pressures per minute. 4. The homemade respirator should not be expected to stand long periods of continuous operation or to serve as a true substitute for a commercial unit. These precautions should be observed by all who participate in the program.

HAZARDS OF MULTIVITAMIN THERAPY IN UNDIAGNOSED PERNICIOUS ANEMIA

The danger of masking pernicious anemia through the use of folic acid-containing proprietary vitamin preparations is emphasized in a recent report by Conley and Krevans.[1] These authors state that, at the Johns Hopkins Hospital, the diagnosis of pernicious anemia was established in 58 patients during the five year period prior to 1950. In eight of these patients the blood values were essentially normal at the time the diagnosis was made. In only one patient, however, was the absence of anemia not explained. In the other seven patients, anemia was known to have been present prior to admission and there was a definite history of treatment with folic acid, liver extracts, or blood transfusions.

In the same hospital during the year 1950, of 10 patients with previously unrecognized pernicious anemia, 5 had essentially normal blood values on admission, and the patients complained only of neurological symptoms. In two patients history of soreness of the tongue was elicited, and, in all five, achlorhydria following histamine injection was demonstrated. Therapy with parenterally administered vitamin B_{12} improved the neurological manifestations in all five patients. Further inquiry revealed that these patients had been taking multivitamin preparations before admission. It was possible to identify the particular preparation used by four of the patients, and, in each case, the folic acid content was found adequate to produce a hematological remission in patients with pernicious anemia. A survey showed that, despite the relatively limited occurrence of folic acid deficiency states, more than 80 of the widely available proprietary vitamin preparations contained folic acid and in most of these the recommended dose provided for at least 5 mg. of folic acid daily, a dose sufficient to maintain a prolonged hematological remission in patients with pernicious anemia. In such patients, however, progressive and severe subacute combined degeneration may develop while the blood picture remains normal. Incorporation of small amounts of vitamin B_{12} in multivitamin preparations will not prevent these neurological manifestations, since this vitamin is poorly absorbed by the gastrointestinal tract in patients with pernicious anemia.

Conley and Krevans stress the hazard of administering folic acid-containing vitamin preparations to patients whose symptoms might be attributable to pernicious anemia. Furthermore, in view of the widespread and often promiscuous use of such preparations, these investigators recommend that patients with neurological manifestations of subacute combined degeneration should be regarded as having pernicious anemia, even though the blood findings are normal, and should receive intensive therapy with parenterally administered B_{12} or purified liver extract.

---

[1] Cline, G. M.; Dolley, H. O., and Osborn, R. C.: Emergency Wooden Respirator, J.A.M.A. 145:485 (Feb. 17) 1951.

[1] Conley, C. L., and Krevans, J. R.: Development of Neurologic Manifestations of Pernicious Anemia During Multivitamin Therapy, New England J. Med. 245:529 (Oct. 4) 1951.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

Industrial workers are the backbone of America's labor force. Without their tremendous productive capacity our country could not have won World War II. As we rebuild our military strength in an effort to keep the "Cold War" cold, it is again their skillful hands which are turning out the weapons for defense. Unfortunately, many of our leaders say that our most crucial defense shortage is in skilled workers. Expanding industries are in need of an increasing number of trained men and women, but they are not always available to fill the need. It is therefore even more important now than in "normal" times for our profession *to concern itself with improving industrial health through prevention of sickness, prompt treatment of disease, and speedy rehabilitation of those who are injured.*

The American Medical Association has had a Council on Industrial Health since 1937. I would like to tell you something of what this Council is trying to do to keep American workers healthy and on the job and how you, as an individual physician, can help in this effort. The Council's activities are aimed in two directions. Some are intended to assist the profession to develop and maintain high standards of medical care in industry. Others are intended to interest labor and management in good health programs for the worker.

The Council foresees an increasing emphasis on the preventive aspects of medicine and believes that a goodly proportion of this activity will be carried out by industrial physicians, who are in an excellent position to spot disease early through their examination programs for workers. The Council also foresees an increasing demand for industrial health programs by both management and labor. It therefore feels that the medical profession must be prepared to meet the need for more industrial physicians. To that end, the Council has worked with the A. M. A.'s Council on Medical Education and Hospitals to encourage U. S. medical schools to place more emphasis on industrial medicine at the undergraduate level and to offer refresher courses for practicing physicians. It has attempted particularly to encourage general practitioners to avail themselves of such industrial medicine courses, because many of them handle industrial cases for plants where a full-time physician is not employed by the company.

In an effort to provide authentic information for industrial physicians who are already in practice and thus assist them in maintaining a high level of professional care, the Council conducts studies in the field and publishes reports in The Journal or in pamphlet form. It has information on such topics as noise in industry, environmental hygiene, health problems of women in industry, workmen's compensation, and rehabilitation of the industrial worker. It also publishes reports on the relationship between the industrial physician and the employer, the physician and the worker, the physician and the community, and the industrial physician and his fellow practitioners.

Soon the Council will undertake a new study made necessary by rearmament. It will survey all heavy defense areas in the country *to determine whether there are enough doctors to care adequately for the increased population attracted to the community by the defense work.* If it finds industrial areas that are short of physicians, it will inform the A. M. A.'s National Placement Service and state medical association placement bureaus, whose function it is to encourage physicians to settle in areas that are somewhat short of doctors.

One of the biggest tasks of the Council has been its effort to convince management and labor of the importance of preventive medicine programs in industry in addition to activities *directed toward cure of disease.* It has strongly supported the establishment of safe working conditions for employees, safety education among workmen, general health education for employees through such means as plant publications, films, and posters, and establishment of programs of physical examinations, both at the beginning of employment and at periodic intervals thereafter. In supporting these preventive programs, the Council works closely with many other agencies, including the National Safety Council and the U. S. Department of Labor.

Every year this important A. M. A. Council sponsors a National Congress on Industrial Health. The 1952 meeting is scheduled for Jan. 18 and 19 in the great industrial center of Pittsburgh. This meeting will draw a large attendance from management, labor, governmental agencies, and the medical profession. It is open to all physicians interested in industrial health. In past years this conference, which is held in industrial cities in different areas of the country, has served as a potent educational medium for advancing sound health programs for workers.

An unusual feature of this year's conference will be a program devoted entirely to the topic "Occupation Housewife." Speakers will discuss the problems of the homemaker who also carries an outside job, the responsibility of the homemaker for the health of her worker-husband, problems of the physically-handicapped housewife, safety in the home, and similar topics.

This is but a brief review of the Council's program for improving industrial health. How can the individual physician help? He can take a personal interest in this field. He can write for the information available from the Council on Industrial Health and study other literature in the field, so that he will be more cognizant of the health problems of the industrial worker. Then he can consult with leaders of industries and of unions in his community and interest them in sound preventive medicine programs. Through increasing his professional knowledge of industrial medicine and then spearheading improved health programs in local industries he can be a real leader in bettering the health standards of the American worker. Through such cooperative effort, too, staunch friendships will be formed with both management and labor.

Industrial health is a field with a future. It deserves our attention and our effort.

John W. Cline, M.D., San Francisco.

ORGANIZATION SECTION

FORTY-EIGHTH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, Feb. 10-12, 1952

TENTATIVE PROGRAM

Advisory Board for Medical Specialties

SUNDAY MORNING, FEB. 10, 9:30 A. M.-12:30 P. M.

CRYSTAL ROOM

Round Table Discussion: Standards for the Approval of Residency Training Programs

- *a.* Methods of Approval
- *b.* The Standpoint of the Teaching Hospital
- *c.* The Standpoint of the Medical School
- *d.* The Standpoint of the Specialty Boards

Participants to be announced

Council on Medical Education and Hospitals American Medical Association

MONDAY, FEB. 11, 10:00 A. M.

RED LACQUER ROOM

H. G. WEISKOTTEN, M.D., *Presiding*

Medical Education and the World Medical Association
LOUIS H. BAUER, M.D., Secretary General, The World Medical Association.

American Students in Foreign Medical Schools
FRANCIS R. MANLOVE, M.D., Associate Secretary, Council on Medical Education and Hospitals, American Medical Association.

The Program of the National Science Foundation in Relation to Research and Education in the Sciences
ALAN T. WATERMAN, PH.D., Director, National Science Foundation.

Panel Discussion: the Place of the Preceptorship in Undergraduate Medical Education
FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas, *Moderator*

Participants to be announced

MONDAY, FEB. 11, 2:15 P. M.

HARVEY B. STONE, M.D., *Presiding*

Chairman's Address: A Study of Factors Relating to the Distribution of Physicians
H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Toward a Regional Program in Medical Education
WILLIAM J. MCGLOTHLIN, Consultant for Professional Programs, Board of Control for Southern Regional Education

Western Regional Cooperation in Higher Education
WARD DARLEY, M.D., Vice President of the University and Dean of the Department of Medicine, University of Colorado

Some Basic Principles in Postgraduate Education
GEORGE AAGAARD, M.D., Dean, Southwestern Medical School of the University of Texas

National Fund for Medical Education
CHASE MELLEN JR., Executive Director, National Fund for Medical Education

American Medical Education Foundation
DONALD G. ANDERSON, M.D., Secretary-Treasurer, American Medical Education Foundation

MONDAY, 5:00 P. M.

ROOM 14

RECEPTION FOR REGISTRANTS OF THE CONGRESS BY THE AMERICAN MEDICAL ASSOCIATION

The Federation of State Medical Boards of the United States

MONDAY, FEB. 11, 7:00 P. M.

CRYSTAL ROOM

FEDERATION DINNER

CHARLES L. SHAFER, M.D., President, *Toastmaster*

A Story of Thirty-Seven Years of Service as a State Board Secretary
ADAM P. LEIGHTON, M.D., Secretary, Maine State Board of Registration of Medicine

Address
JOHN W. CLINE, M.D., President, American Medical Association.

TUESDAY, FEB. 12, 9:00 A. M.

RED LACQUER ROOM

CHARLES L. SHAFER, M.D., *Presiding*

The Role of a State Board Today
CHARLES L. SHAFER, M.D., Chairman, Pennsylvania Board of Medical Education and Licensure.

Narcotic Control by Physicians
HARRY L. ANSLINGER, Commissioner, and ALFRED L. TENNYSON, Chief Counsel, Department of Narcotics, United States Treasury.

Panel Discussion: Problems of the Internship and Residency as Related to Medical Licensure
WALTER E. VEST, M.D., Chairman, West Virginia State Licensing Board, *Moderator.*
VICTOR JOHNSON, M.D., Director, Mayo Foundation for Medical Education and Research.
CHARLES L. BROWN, M.D., Dean, Hahnemann Medical College and Hospital of Philadelphia
A. C. BACHMEYER, M.D., University of Chicago
BRUCE UNDERWOOD, M.D., Secretary, Kentucky State Board of Health
ELMER W. SCHNOOR, M.D., President, Michigan Board of Registration in Medicine

TUESDAY, 12:30 P. M.

CRYSTAL ROOM

FEDERATION LUNCHEON

CHARLES L. SHAFER, M.D., *Presiding*

The Modern Medical School: Its Obligations
FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas

REPORT OF COMMITTEE ON RESOLUTIONS

REPORT OF COMMITTEE ON NOMINATIONS

UNFINISHED BUSINESS

INTRODUCTION OF PRESIDENT-ELECT, WALTER E. VEST, M.D.

ADJOURNMENT

MEDICAL NEWS

CALIFORNIA

Society News.—The Los Angeles County Medical Association at its annual meeting December 6 elected Dr. Wilbur Bailey president, Dr. Eric A. Royston vice-president, and Dr. Paul D. Foster secretary-treasurer.

Forum in Obstetrics and Gynecology.—The Los Angeles Obstetrical and Gynecological Society is sponsoring a forum February 8-9 for all interested, licensed physicians. A program by prominent authorities in the field of obstetrics and gynecology, including Drs. Jacob P. Greenhill of Chicago, Robert A. Kimbrough of Philadelphia, Thomas N. A. Jeffcoate of Liverpool, and Hans Selye of Montreal, is planned.

ILLINOIS

Conference on Physicians and Schools.—On November 15-16 the First Illinois Conference of Physicians and Schools was held on the University of Illinois campus in Urbana. There were 102 physicians, dentists, nurses, and educators present. This conference was arranged by the educational committee of the Illinois State Medical Society in cooperation with the Illinois State Dental Society, the Illinois Department of Public Health, and the Illinois Department of Public Instruction. A request was made by those in attendance for a subsequent conference. Resolutions were adopted aiming to improve the environment of the schools physically, socially, and emotionally, as well as promote the health of school children.

Chicago

Society News.—The Institute of Medicine of Chicago announces the following officers for 1952: Dr. Henry T. Ricketts, chairman of the board of governors; Dr. Vincent J. O'Conor, president; es R. Blayney, D.D.S., vice-president; Dr. George H. Cole-n, secretary, and Dr. E. Lee Strohl, treasurer.

Maddock Succeeds Dr. McNealy.—Dr. Walter G. Maddock has been appointed chairman of the department of surgery at Wesley Memorial Hospital, succeeding Dr. Raymond W. McNealy, who becomes chairman emeritus. Dr. McNealy has headed the surgical staff since 1929 and is retiring because of the hospital 65 year age limit. Dr. Maddock has been senior attending surgeon.

Dr. Hellebrandt to Head Department.—Dr. Frances A. Hellebrandt of the Medical College of Virginia, Richmond, has assumed duties as professor and head of the department of physical medicine and rehabilitation at the University of Illinois College of Medicine and chief of the service at the University of Illinois Research and Educational Hospitals. She has succeeded Dr. H. Worley Kendell, who has resigned as head of the department to accept a position as medical director of the Institute of Physical Medicine and Rehabilitation at Peoria. Dr. Kendell will retain an appointment at the University of Illinois as clinical professor of physical medicine and rehabilitation. Dr. Hellebrandt formerly held the rank of professor of physical medicine and director and chief of the Division of Medical Research of the Baruch Center of Physical Medicine and Rehabilitation at the Medical College of Virginia, where she had been since 1944.

INDIANA

Psychosomatic Forums.—Forums on psychosomatic problems are being held on the campus of Indiana University Medical Center in Indianapolis the first Monday of each month. The January 7 meeting will be on "Age, Sex and Psychodynamics in the Eye Injuries of Children (A Statistical Study)" by Drs. Theodore F. Schlaegel, Indianapolis, and Philip F. D. Seitz, Philadelphia. Ralph Reitan, Ph.D., will discuss "Use of Statistics in Medical Research." The February 4 meeting will be on "Iatrogenesis in Psychosomatic Disorders" presented by Dr. Louis W. Nie, Indianapolis.

IOWA

Senior Students to Serve Preceptorships.—Seniors in the State University of Iowa College of Medicine will serve one-month preceptorships with private Iowa general practitioners in the future as part of their undergraduate medical training. The plan is designed to provide medical students the opportunity (1) to observe closely and under ideal conditions the activities of a private physician in conduct of his practice; (2) to study carefully the modern methods of medical care as employed in the home and in the office by a private general practitioner, and (3) to observe the close personal relationship of the private physician to his patient. The plan, which will probably become effective in June, 1952, extends the senior curriculum in the college of medicine by one month, although it will not affect the student's graduation date. There will be no increase in tuition fees as a result of the plan.

Iowa's general practitioners will be asked to volunteer their services as preceptors without compensation. Final selections will be made by the dean of the college or the executive committee currently carrying out the dean's duties, with the aid of the college faculty, the Iowa Academy for General Practice, and the Iowa State Medical Society. It is hoped that preceptors will provide room and board for students assigned to them. In return medical students will aid the preceptors in the conduct of their practice to the extent permitted by the Iowa Code, receiving no payment for their services.

MASSACHUSETTS

House Officers Evening Lectures.—The House Officers Association of the Boston City Hospital announces the following programs in its evening lecture series in January:

January 8, Massive Gastrointestinal Hemorrhage, Dr. Claude E. Welch, Massachusetts General Hospital, Boston.
January 10, Clinical and Epidemiological Aspects of Coxsackie Virus Infections, Dr. Pierre Lepine, Pasteur Institute, Paris, France.
January 15, Arterial Hypertension: An Evaluation of Some Factors Which Influence Its Natural History, Eugene B. Ferris, University of Cincinnati College of Medicine.
January 22, Epidemiology of Infectious Hepatitis, Richard B. Capps, Northwestern University Medical School, Chicago.
January 29, Heart Failure, Eugene A. Stead, The Duke University School of Medicine, Durham, N. C.
January 31, Dicumarol, Its Action on Blood Clotting and Its Clinical Aspects, Paul A. Owren, University of Oslo (Norway) Medical School.

These programs will be held at 7 p. m. in the New Cheever Amphitheatre of the Dowling Building of Boston City Hospital.

MISSOURI

County Society Public Lecture.—Dr. Herbert Rattner, professor and chairman of the department of dermatology of Northwestern University Medical School, Chicago, gave the first of the 1951-1952 Public Health Lecture Series sponsored by the Woman's Auxiliary to the Buchanan County Medical Society November 29 in St. Joseph. He spoke on "Skin, a Mirror of Your Health."

Institute of Experimental Medicine.—The St. Louis University School of Medicine recently received a gift of $200,000 as an endowment to the department of internal medicine for emphasizing research in emphysema. James B. Miller, former president of Mines Equipment Company and recipient of the 1949 Fleur de Lis Award of the university, has added the sum to his half million dollar contribution made at the time of his retirement from business. The endowment has made possible the establishment of new and expanded facilities, including laboratories for pulmonary function testing and heart and blood vessel catheterization. The endowment is known as the James B. Miller and Ethel D. Miller Institute of Experimental Medicine.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

NEBRASKA

Society News.—At the annual dinner and business meeting of the Omaha Mid-West Clinical Society November 27, Dr. J. Harry Murphy, Omaha, was installed as president. Newly elected officers include Dr. Herbert H. Davis, Omaha, president-elect, and Dr. Payson S. Adams, Omaha, director of clinics. Dr. Louis E. Moon of Omaha continues as secretary-treasurer. The next annual assembly will be held in Omaha October 27-31.

NEW JERSEY

Conference on Protein Metabolism.—The eighth annual conference on protein metabolism, sponsored by the bureau of biological research of Rutgers University, will be held in New Brunswick the afternoon and evening of February 1 and the morning of February 2. The tentative program is as follows:

James H. Leathem, Ph.D., New Brunswick, Relationships Between Thyroid and Protein Metabolism.
Jane A. Russell, Ph.D., Atlanta, Actions of Growth Hormone on Metabolism of Nitrogen.
Leo T. Samuels, Ph.D., Salt Lake City, Effect of Variation in Total Protein and Amino Acids of Diet on the Endocrine System.
Charles D. Kochakian, Ph.D., Oklahoma City, Relationships Between Anabolic Steroids and Protein Metabolism.
Frank L. Engel, Durham, N. C., Relationships Between the Adrenal Cortex and Protein Metabolism.
Laurance W. Kinsell, Oakland, Calif., Relationships Between Hormones and Protein Metabolism in Man.

A registration fee of $2 will be charged for the conference. Reservations should be made by January 17 with Prof. William H. Cole, Rutgers University, New Brunswick.

NEW YORK

Change of Date of Postgraduate Lecture.—Dr. Thomas H. McGavack, *professor of clinical medicine, New York Medical* College, will speak at a meeting of the Rensselaer County Medical Society at 8:30 p. m. February 12 at Leonard Hospital in Troy on "Common Errors in Management of Diabetic Coma." The lecture was originally scheduled for December 11.

Personal.—Dr. Edwin G. Ramsdell, chief-of-staff and director of surgery at White Plains Hospital, received Columbia University's Lion Award December 6 for "outstanding service to his country, community, and to his university." Dr. Ramsdell has served since 1934 as president of the Westchester County Board of Health, as medical advisor to the Westchester Chapter of the American Red Cross, president of the Westchester County Medical Society, and treasurer of the American Goiter Association.

New York City

Academy Receives Paul Ehrlich Mementos.—The Paul Ehrlich Mementos were presented to the New York Academy of Medicine December 5. The mementos are a gift of the Schwerin family. At the ceremony addresses were presented by Dr. William Barclay Parsons, president of the New York Academy of Medicine, Dr. Perrin H. Long, and Selman A. Waksman, Ph.D., New Brunswick, N. J. Paul Ehrlich is best known for his discovery of arsphenamine (salvarsan®) and as the father of chemotherapy. Between 1877 and 1914 he published 232 scientific papers and books. In addition, more than 400 papers were published by his assistants and collaborators. The mementos are to be placed in the rare book room of the academy and will be available for use under academy regulations.

NORTH CAROLINA

Travel Club Organized.—The Nick Carter Travel Club, a group of former Duke Hospital residents, house staff members, instructors, and fellows in obstetrics and gynecology, held its first meeting December 8 in Burlington. Each of the 55 members present has had at least one year of training since 1931 under Dr. Bayard "Nick" Carter, chairman of the obstetrics and gynecology department at The Duke University, Durham. Dr. Walter L. Thomas, obstetrician at Duke and president of the group, said the organization aim is to promote scientific knowledge by assembly and the interchange of ideas and practice related particularly to obstetrics and gynecology. The doctors visited the wards and held a clinic in the hospital. Papers were presented at the afternoon session. During the business meeting the provisional constitution and by-laws were amended and adopted. The club will meet at least once a year. Next year members from the Midwest and the West Coast are expected to attend. Officers are Dr. Walter L. Thomas of the university, president; Dr. Robert Alter, Duke house staff, vice-president, and Dr. John R. Kernodle, Burlington, secretary-treasurer.

VIRGINIA

University Appointments.—Dr. Walter O. Klingman has been promoted from associate professor to professor of neurology and psychiatry at the University of Virginia Department of Medicine, Charlottesville. Other promotions announced recently include those of Dr. Kenneth R. Crispell to assistant professor of internal medicine; Dr. Robert A. Kelley to assistant professor of urology; Dr. Preston B. Lowrance to assistant professor of internal medicine, and Hans Hoch, Ph.D., to assistant professor of biochemistry.

GENERAL

Radiological Award Given Dr. Pfahler.—The gold medal of the Radiological Society of North America was presented to Dr. George E. Pfahler, Philadelphia, December 6 at the annual banquet of the society in Chicago. The medal, awarded for outstanding achievement in radiology, was presented by Dr. John S. Bouslog, Denver, retiring president of the society.

Railway Surgeons Meeting.—The Atlantic Coast Line Railway Surgeons Association will hold its 48th annual meeting at the Fort Sumpter Hotel, Charleston, S. C., January 24-25. Visiting physicians are welcome. There is no registration fee. Speakers include Dr. Joseph S. Stewart, Miami, Fla., president, Southeastern Surgical Congress; Dr. Samuel Marshall, Lahey Clinic, Boston, and Dr. Elam C. Toone, Medical College of Virginia, Richmond.

Occupational Therapy Journal Changes Name.—*Occupational Therapy and Rehabilitation* is changing its name to the *American Journal of Physical Medicine* for the first issue in 1952. It is changing its scope to include the entire field of physical medicine and rehabilitation. The new editor Dr. Harry D. Bouman, professor of physical medicine at the University of Wisconsin Medical School, Madison, will be assisted by a 19 member editorial board.

Science Writing Awards.—The American Association for the Advancement of Science presented its annual prizes of $1,000 each at its convention December 28 in Philadelphia. One award went to Victor Cohn of the *Minneapolis Tribune* for a series of articles on the problems and opportunities of old age, entitled "Never Too Old," published last January. The second prize of $1,000 went to Mr. John Lear, an associate editor of *Collier's* for his article, "Atomic Miracle," in the April 21 issue of the magazine. It described pioneer medical research being done with nuclear reactions at Brookhaven National Laboratory, Upton, L. I., N. Y.

Obesity and Length of Life.—New evidence that obesity shortens life has been provided by a study of mortality among more than 50,000 persons who were limited to substandard life insurance because of obesity, according to Dr. Louis I. Dublin of the Metropolitan Life Insurance Company. Mortality for the overweight group was about 50% higher than that of persons accepted for standard insurance. Men with marked obesity had a mortality of 70% above standard risks compared with an excess of 42% for those moderately obese. Among women the increased mortality was 61% and 42% for the marked and moderately obese, respectively.

Grants for Research.—Two grants for medical research have been awarded by Sharp & Dohme, Inc., to scientists at Western Reserve University, Cleveland, and at the University of Texas. These are two of four grants thus far awarded from a $50,000 fund recently created by Sharp & Dohme for the advancement of fundamental research in the fields of biology, microbiology, and chemistry. A three-year grant of $6,000 for fundamental research in the virus field was awarded to Lester O. Krampitz, Ph.D., director of microbiology, Western Reserve University. Another $6,000 grant was awarded for basic research to Esmond E. Snell, Ph.D., of the biochemical institute, University of Texas, Austin. He will use the grant for research in bacterial metabolism.

Health Departments in the United States.—The national advisory committee on local health units of the National Health Council reported December 7, according to the *New York Times,* that half of the counties of the United States do not have the elementary protection of a local fulltime health department. The report, based on figures of the United States Public Health Service, was made by Dr. Haven Emerson, professor emeritus of public health practice, Columbia University, New York, and Dr. Lee A. Rademaker of Salisbury, Md. The total number of health departments has risen from 1,110 to 1,228 since 1946; the number of counties covered has risen from 1,332 to 1,566, and the population living in communities protected by health departments has increased from 91,000,000 to 108,000,000, he reported.

National Conference on Medical Service.—This conference will be held at the Palmer House, Chicago, February 10 under the chairmanship of Dr. Harlan A. English, Danville, Ill. The Illinois State Medical Society will act as host. The subject of this year's conference will be "America's Next Social and Health Crisis." During the morning, according to the preliminary program, the care of the aged with chronic disease will be the subject of two papers to be presented by an insurance actuary and a representative of a city welfare department. The afternoon program is as follows:

George Craig, Indianapolis, past commander of the American Legion, Future Implications of Veterans' Medical Care.
Admiral Joel T. Boone, chief medical officer, Veterans Administration, Washington, D. C., Unusual Problems in Veterans' Medical Care.
Speaker to be announced, Hometown Veterans' Care, A Success or a Failure?

The luncheon speaker will be the Hon. Everett M. Dirksen, U. S. Senator from Illinois, whose subject will be "Our Citizens and Their Doctors."

General Practice Residency Scholarships.—The American Academy of General Practice announces that it will award nnually five $1,000 stipends to outstanding medical students nterested in taking general practice residencies, the money to be paid in monthly installments during the year of residency. A fund for this purpose has been contributed to the academy by Mead Johnson & Co. Winners will be selected by the Mead Johnson General Practice Scholarship Committee made up of prominent physicians who serve as trustees of the fund. The committee will name each year five medical schools whose students will be eligible for the award, and the deans of these schools will each nominate three candidates from the senior class. Final selection will be made from this list. In order to begin the program in 1952, the committee will choose interns from five selected hospitals for that year's award. Winners and alternates for 1952 and 1953 will be announced March 25 during the annual scientific assembly of the academy in Atlantic City, N. J. The scholarship committee, headed by chairman Dr. William B. Hildebrand of Menasha, Wis., includes Drs. William H. Anderson of Booneville, Miss., Mary E. Johnston of Tazewell, Va., Dave F. Dozier of Sacramento, Calif., H. Kenneth Scatliff of Chicago, and Fred A. Humphrey of Fort Collins, Colo. Award winners will be selected on the basis of scholarship, professional aptitude, and fitness for general practice.

Courses in Allergy.—The American Academy of Allergy will present two postgraduate courses at the Hotel Sherman in Chicago February 15-17. The first, meeting on February 15, will consider physical methods, including electrophoresis and ultracentrifuge, quantitative precipitin techniques, complement fixation tests, the Schultz-Dale technique, and tracer techniques. The faculty will be Drs. Paul R. Cannon, Saul Malkiel, and Elmer L. Becker, Chicago; Dr. Frank Dixon Jr., Pittsburgh; Dr. Samuel C. Bukantz, St. Louis, and E. Jack Coulson, Ph.D., Washington, D. C. On February 16 residents and attending staffs of universities and hospitals in Chicago will present patients to guest lecturers for diagnostic and therapeutic comment and advice. The morning program will be devoted to patients with bronchial asthma and emphysema, and in the afternoon, complications in allergic diseases and uncommon allergic disorders will be presented. The second course in dermatologic allergy will be given on February 17. The emphasis will be on morphologic recognition and differential diagnosis of various allergic dermatological entities, including methods and techniques of determining the causal substance for a given allergic dermatosis, therapy, both topical and systemic, and psychosomatic aspects. The faculty will be Dr. Louis A. Brunsting, Rochester, Minn.; Drs. Stephan Epstein and Francis W. Lynch, Minneapolis; Drs. Adolph Rostenberg Jr., Stephen Rothman, and James R. Webster, Chicago; and Dr. Oscar Swineford Jr., Charlottesville, Va. The fee is $25 per person for the entire course or any part of it. A course on mold and pollen identification will be conducted as a laboratory course for three days at Northwestern University Medical School. It is open to physicians and technicians.

Eye, Ear, Nose and Throat Section Meetings.—The American Laryngological, Rhinological, and Otological Society, Inc., will hold section meetings throughout the country during January. The first is to be at the Waldorf-Astoria Hotel, New York, on January 11. Those presenting papers by invitation include:

Stewart Wolf, New York, Causes and Mechanisms in Rhinitis.
Monroe J. Romansky, Washington, D. C., *Current Trends in the Us of Antibiotics.*
Joseph L. Goldman, New York, Bacteriologic Aid in Rhinologic Disease

The Southern section will meet at the Atlanta Athletic Clul January 13. The eight papers to be presented include one b Dr. John E. Bordley, Baltimore, who will speak by invitation o "The Problem of the Pre-School Deaf Child."

The Western section of the society will meet January 19-20 a the Los Angeles County Medical Society Building in Lo Angeles. The banquet will be at 7 p. m. at the Jonathan Clut Those presenting papers by invitation include:

Ralph G. Rigby, Salt Lake City, Present Status of Diagnosis and Treat ment of Globus Hystericus.
William H. Rustad, San Francisco, Revised Anatomy of Recurren Laryngeal Nerves: Surgical Importance Based on the Dissection c 100 Cadavers.
James W. Phillips, Seattle, Early Otolaryngological Symptoms in Mu tiple Sclerosis, with Suggested Therapy.

The Middle section of the society will meet at the Indianapoli Athletic Club. The authors of papers being presented by invitation include:

Henry A. Brown, Rochester, Minn., Ear Findings in Cerebellopontin Angle Tumors.
John J. Mahoney, Ph.D., Indianapolis, Hormones in Otolaryngology.
E. N. Kime, Indianapolis, Cephalgic Mechanisms with Special Referenc to the Seventh Cranial Nerve.

Report of Association for Mental Health.—According to th first annual report of the National Association for Menta Health, mental illness continues to be the nation's number on health problem. Today there are more people in mental hospitals than there are in all other types of hospitals, and menta hospitals are still sadly understaffed. There are only enoug clinics to take care of a fraction of those who need them, th association asserts. Moreover, the amount of money being spen on research for the discovery of the causes and methods o treatment is pitifully inadequate. The association is a nationa citizens' association formed in September, 1950, through the consolidation of the three leading organizations in the field. It doe not give direct psychiatric services, but devotes itself to bringin about improvement and expansion of these services througl consultation, education, and research. Currently 17 scientist are working in as many separate studies under the guidance o the association's medical director, Dr. George S. Stevenson, an Dr. William Malamud, professor of clinical psychology at Tuft College Medical School. The project is financed by the 33r Degree Scottish Rite, which increased its annual grants fron $50,000 to $70,000 for 1952. The report also reveals that th association sponsors and helps finance inspection and ratin programs for public mental hospitals. These surveys, conducte by the American Psychiatric Association, are designed to promote the establishment of higher standards in these hospital During the year 42 hospitals in 11 states, Canada, and Hawa have been inspected. Organizational work carried on by th association contributed in the past year to the formation of 6 new citizens' mental health associations throughout the countr

DEATHS IN OTHER COUNTRIES

Dr. K. Subrahmanyan, member of the World Health Organization's Expert Committee on Cholera, was killed November 20 in an airplane crash between New Delhi and Calcutta while returning from the Cholera Expert Committee session in New Delhi. He had been expected to join the staff of the South-East Asia Regional Office as its first environmental sanitation adviser.

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, *Secretary.*

American College of Clinic Administrators, Conrad Hilton Hotel, Chicago, Jan. 13-15. Dr. R. J. Wilkinson Jr., 1115 Sixth Avenue, Huntington, W. Va., President.

American College of Radiology, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Annual Congress on Industrial Health, William Penn Hotel, Pittsburgh, Jan. 18-19. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Atlantic Coast Line Railway Surgeons Association, Fort Sumpter Hotel, Charleston, S. C., Jan. 24-25. Dr. Braswell E. Collins, Waycross, Ga., Secretary.

International Medical Assembly of Southwest Texas, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 2445, San Antonio 6, Secretary.

National Conference on Medical Service, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., *Secretary.*

National Conference on Rural Health, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

Sectional Meetings, American College of Surgeons:
- Birmingham, Ala., The Tutwiler, Jan. 10-12. Dr. James M. Mason III, 1023 South 20th St., Birmingham, Chairman.
- Panama City, R. P., El Panama, Jan. 16-18. Dr. Jaime De la Guardia, Box 808, Panama City, R. P., Chairman.
- Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.
- Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. *Allman, 104 St. Charles Place, Atlantic City, Chairman.*
- Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

Southern Section, American Laryngological, Rhinological and Otological Society, Atlanta, Ga., Jan. 14. Dr. Lester A. Brown, 490 Peachtree St. N.E., Atlanta 3, Ga., Vice President.

Tri-States Medical Association of the Carolinas and Virginia, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

Congress of the International Diabetes Federation, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33. Prinsegracht, The Hague, Netherlands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, *Buenos Aires, Argentina*, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

International College of Surgeons, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

International Conference on Vitamins and Metabolism, Havana, Cuba, Jan. 25. Dr. Angel Vieta Barahona, Medical School, University of Havana, Havana, Cuba, General Chairman.

International Congress of Internal Medicine, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1; England, Secretary.

International Congress on Neuropathology, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A.. Secretary General.

International Congress of Physical Medicine, London, England, July 14-19. Dr. A. C. Boyle, 45. Lincoln's Inn Fields, London, W.C.2. England, Hon. Secretary.

Latin American Congress of Physical Medicine, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., *Executive Director.*

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, *Symposium Neuroradiologicum, Serafimerlasarettet*, Stockholm K., Sweden, Secretary.

Pan American Congress of Ophthalmology, Mexico City, Mexico, Jan 6-12. Dr. Luis Sanchez Bulnes, Gomez Farias 19, Mexico 4, D.F., Secretary-General.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II*, Jan. 28-30. All centers where there are five or more candidates. Final date for filing application was Dec. 17. Exec. Sec., Mr. John B. Hubbard, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Various Locations, July 18. Final date for filing application is Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

American Board of Dermatology and Syphilology: *Written.* Various centers. March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

American Board of Neurological Surgery: *Oral.* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

American Board of Obstetrics and Gynecology: *Written.* Feb. 1, 1952. Final date for filing applications was Nov. 1. *Oral.* Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written.* Twenty-five centers, Feb. 4-5, 1952. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II.* Chicago, Jan. 23-25. Final date for filing applications for the 1952 Part II examinations was Aug. 15. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

American Board of Otolaryngology. Toronto, May 13-17; Chicago, Oct. 6-10. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

American Board of Pediatrics: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., Mar. 21-23; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Physical Medicine and Rehabilitation: *Parts I and II.* Chicago. June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

American Board of Preventive Medicine and Public Health. *Written.* Berkeley, Calif., Minneapolis, New Orleans and Baltimore. April 18. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology. *Part I.* Kansas City, Minneapolis, Philadelphia and San Francisco. May 3. Examination includes both oral and written examinations in the basic sciences. *Dates and places tentative.* Sec., Dr. Louis A. Buie, 102-110 2d Ave., S.W., Rochester, Minn.

Amercian Board of Psychiatry and Neurology: *Oral* New York, Dec. 17-18. *Final date for filing applications was Sept. 1. Act. Sec., Dr. David* A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Spring 1952. Final date for filing application is Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

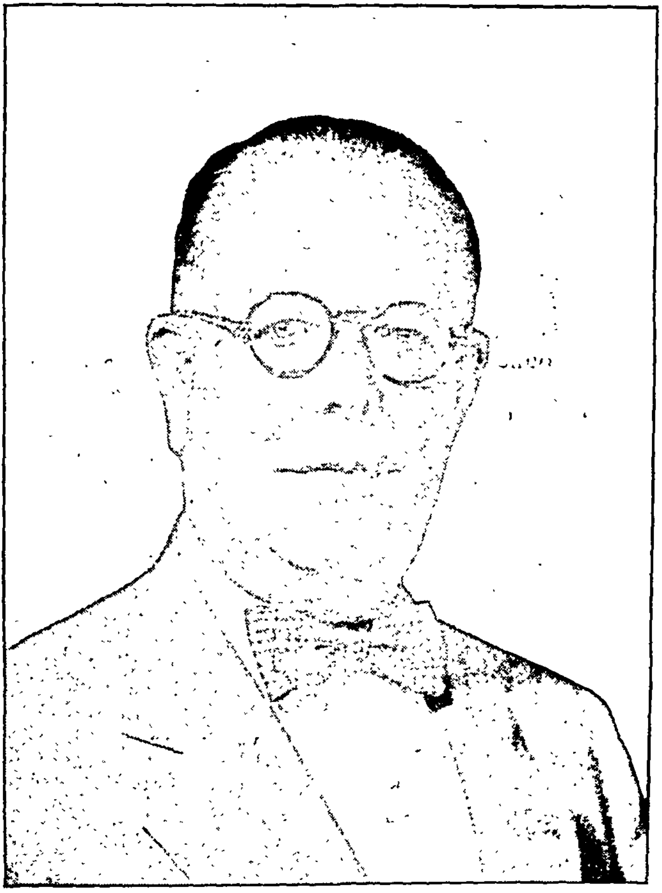
American Board of Surgery: *Written.* Various Centers. March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb. 9 13, 1952. *Final date for* filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

Board of Thoracic Surgery: Various parts of the country. *Written.* Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. William M. Tuttle, 1151 Ta Detroit 2.

DEATHS

Hunter, Oscar Benwood ⊕ Washington, D. C., Vice-President of the American Medical Association, 1951-1952, died suddenly December 19, aged 63, of a heart attack. Dr. Hunter was born in Cherrydale, Va., Jan. 31, 1888. In 1912 he received his medical degree from George Washington University, where he received his A.B. degree in 1916 and his A.M. in 1917. Following graduation from medical school, Dr. Hunter joined the staff of his alma mater as instructor in anatomy. He was professor of histology and embryology from 1913 to 1916, professor of bacteriology and pathology from 1916 to 1932, acting dean of the dental school in 1918, and assistant dean of the medical school from 1918 to 1932. He was formerly adjunct professor of clinical medicine at Georgetown University and professorial lecturer at American University and Georgetown. In 1926 he delivered the lecture of the Kober Foundation at Georgetown and from 1932 to 1940 was professor of sanitary science at the Central Training School for Nurses. Dr. Hunter served many medical organizations in an official capacity. He was past president of the Southern Medical Association, Medical Society of the District of Columbia, George Washington University Medical Society (also secretary since 1939), Washington Society of Pathologists, and American Therapeutic Society, of which he had been secretary. Dr. Hunter was a fellow of the American College of Physicians and the College of American Pathologists, of which he had been a governor, and an associate of the International College Surgeons. He held memberships the American Hospital Associa- n, Washington Heart Associa- ion, Washington Academy of Sciences, Washington Academy of Medicine, International Association of Medical Museums, District of Columbia Rheumatism Society, Diabetes Association of the District of Columbia, American Heart Association, American Association of Anatomists, Society of American Bacteriologists, American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Association for the Advancement of Science, American Association for the Study of Neoplastic Diseases, Association of Military Surgeons of the United States, Reserve Officers Association of the United States, and the American Public Health Association. Dr. Hunter was also a member of many other organizations such as the National Safety Council, Board of Trade, and Chamber of Commerce of the U. S. A. He was a major in the medical reserve corps of the U. S. Army (inactive). He was a consultant in pathology at the Montgomery County General Hospital in Olney, Md.; pathologist-in-chief at the George Washington University Hospital and Dispensary from 1916 to 1932; pathologist of the Doctors Hospital since 1940 and the Sibley Memorial Hospital since 1925. In 1928-1929 and 1929-1930 he was president of the General Alumni Association of George Washington University; he was secretary of the Washington Medical Building Corporation, Columbia Medical Building Corporation, Columbia Operating Corporation, and the Doctors Hospital. Dr. Hunter contributed many articles to medical journals.



OSCAR BENWOOD HUNTER, M.D., 1888-1951

Branham, Vernon C. ⊕ Silver Spring, Md.; born in Denver, May 26, 1889; University of Colorado School of Medicine, Denver, 1919; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the American Psychopathological Association; at one time secretary of the American Association of Mental Hygiene Executives; president of the National Association of Psychiatric Clinics; member of the New York State Board of Psychiatric Examiners; director of the Research Workers in Psychiatric Approach to Problems in Criminology; director of the state committee on mental hygiene of the State Charities Aid Association; director of psychiatric clinics, New York State Commission for Mental Defectives from 1924 to 1927; director of the New York State and New York City Committees on Mental Hygiene from 1927 to 1930; deputy commissioner of New York State Department of Correction in charge of psychiatric services in prisons from 1930 to 1935; senior assistant physician, New York State Psychiatric Institute, New York, from 1920 to 1923; director of the New York State Psychiatric Institute Medical Center in New York, 1928-1929; superintendent of the Woodbourne (N. Y.) Institution for Defective Delinquents from 1935 to 1947; first assistant physician, and assistant superintendent, Institution for Defective Delinquents, in Napanoch, N. Y., in 1924; served on the consultant staff in neurology and psychiatry at Monticello (N. Y.) Hospital; chief of the outpatient department, neuropsychiatric division, Veterans Administration in Washington, D. C.; editor of the *Journal of Clinical Psychopathology*, formerly *The Journal of Criminal Psychopathology*, which he had edited and published; one of the editors of the "Encyclopedia of Criminology"; died October 23, aged 62, of coronary occlusion.

Stetten, DeWitt ⊕ New York; born in New York Jan. 22, 1881; Columbia University College of Physicians and Surgeons, New York, 1901; formerly clinical professor of surgery at his alma mater from 1909 to 1918; member of the founders group of the American Board of Surgery; in 1929 president, a trustee from 1932 to 1935, and chairman of the board in 1935 of the Medical Society of the County of New York; member of the American Association for Thoracic Surgery, American Gastro-Enterological Association, International Society of Gastro-Enterology, National Tuberculosis Association, American Cancer Society, Association of Military Surgeons of the United States, American Association for the Advancement of Science, Academy of Political Science, New York Surgical Society, New York Society for Thoracic Surgery, New York Pathological Society, and Military Order of the World Wars; fellow of the American College of Surgeons and the New York Academy of Medicine; veteran of the Spanish-American War and World War I; for many years affiliated with Lenox Hill Hospital; at one time on the staff of Beth Israel Hospital; president of the board of trustees of the Blood Transfusion Association of New York, chairman of the medical committee for the local Red Cross Blood Donor Service, and secretary of the board of the United

---

⊕ Indicates Fellow of the American Medical Association.

Medical Service; died November 10, aged 70, of coronary thrombosis.

Stevenson, Walter Davis ⊕ Quincy, Ill.; born in Baltimore Oct. 28, 1883; Baltimore Medical College, 1906; formerly instructor at his alma mater; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; president of the Illinois State Medical Society, 1949-1950, chairman of its council, 1946-1948, and formerly councilor of the Sixth District; a charter member, president of the board of trustees, member of the advisory committee, and in 1935 first president of the Mississippi Valley Medical Society, which awarded him its 1942 Distinguished Service Award; past president and secretary of the Adams County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served overseas during World War I and was chief ophthalmologist for the American Expeditionary Force Base Hospital 54; formerly member of the county board of health; visiting eye surgeon at various mission hospitals in India, 1937-1938; affiliated with Blessing and St. Mary's hospitals; extramural surgeon, Illinois Eye and Ear Infirmary in Chicago; attending eye surgeon for the Veterans Administration; aviation examiner, Civil Aeronautics Authority; oculist for the Chicago, Burlington, and Quincy Railroad; for many years on the editorial board of the *Mississippi Valley Medical Journal;* formerly editor of the *Quincy Medical Bulletin;* died October 26, aged 67, of cerebral hemorrhage.

Allen, Victor Kirkpatrick ⊕ Tulsa, Okla.; born in Hope, Ark., in 1888; Tulane University of Louisiana School of Medicine, New Orleans, 1915; specialist certified by the American Board of Surgery and the American Board of Proctology; member of the American Proctologic Society and International College of Surgeons; fellow of the American College of Surgeons; president of the Tulsa County Medical Society in 1948; at the time of his death was serving his second term as councilor to the Oklahoma State Medical Association; served with the American Expeditionary Forces in France during World War I; one of the founders and a member of the board of trustees of the Blue Cross Plan of Oklahoma; largely responsible for establishing the Tulsa County Red Cross Blood Center, and the health and accident group insurance plan of the state medical association; affiliated with St. John's Hospital; member of the board of governors of Hillcrest Hospital, where he died November 9, aged 63, of complications from polycythemia.

Aldridge, James Wesley, Covington, Ind.; University of Illinois College of Medicine, Chicago, 1913; member of the American Medical Association; served overseas during World War I; during World War II served on the Selective Service Board and was its president at the time of his death; died in St. Elizabeth's Hospital in Danville, Ill., October 30, aged 60.

Altenhofen, Allton Rheinhold ⊕ Wauwatosa, Wis.; born in Madison, Wis., May 8, 1894; Marquette University School of Medicine, Milwaukee, 1919; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; affiliated with St. Nicholas and Sheboygan Memorial hospitals in Sheboygan and Misericordia Hospital, St. Anthony Hospital, St. Michael Hospital and St. Joseph Hospital, where he died October 31, aged 57, of pulmonary embolism.

Baldwin, Byron Lee ⊕ San Gabriel, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1925; affiliated with Beverly Community Hospital in Montebello; died near Bend, Ore., November 3, aged 54, in an airplane accident.

Barnhart, Edgar G., Omaha; John A. Creighton Medical College, Omaha, 1910; president of the Barnhart Press; served on the staff of Lord Lister Hospital, now known as Bishop Clarkson Memorial Hospital; died November 1, aged 67, of coronary thrombosis.

Barrett, Andrew Linn, Bronxville, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; died October 1, aged 91, of arteriosclerotic heart disease.

Beakey, Howard Francis ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1923; specialist certified by the American Board of Internal Medicine; served during World War I; formerly assistant clinical professor of medicine at his alma mater; affiliated with Holy Family Hospital, Kings County Hospital and St. Mary's Hospital, where he died November 14, aged 55.

Benner, William Henry, Tiffin, Ohio; Starling Medical College, Columbus, 1897; member of the American Medical Association; served during World War I; for many years county coroner; died October 5, aged 77, of coronary thrombosis.

Blair, Andrew C., Parkersburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1891; died October 23, aged 87.

Block, Alexander, San Diego, Calif.; University of the City of New York Medical Department, 1890; died October 31, aged 84.

Bohannon, Burton ⊕ St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1902; on the staff of St. Anthony Hospital, where he died November 6, aged 74, of myocardial infarction.

Brace, Clifford C. C., Berkeley, Ill.; Hahnemann Medical College and Hospital, Chicago, 1919; served during World War I; formerly on the staff of the Veterans Administration Hospital in Hines; died December 2, aged 66.

Brown, Edwards Bennett, Beloit, Wis.; Johns Hopkins University School of Medicine, Baltimore, 1906; affiliated with Beloit Municipal Hospital; public school physician for many years; died in Hinsdale, Ill., September 19, aged 74, of coronary thrombosis.

Brown, Hugh Laurence ⊕ Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1929; affiliated with Beverly Community Hospital in Montebello; died in the vicinity of Klamath Falls, Ore., November 3, aged 47, in a crash of a private plane.

Bullard, Oscar Richard, St. Louis; St. Louis College of Physicians and Surgeons, 1909; physician for the Missouri Athletic Commission; died in Park Lane Memorial Hospital November 9, aged 67, of carcinoma.

Burkett, Richard Clare ⊕ Napa, Calif.; University of Illinois College of Medicine, Chicago, 1922; past president of the Napa County Medical Society; served during World War I; member of the board of trustees of Parks Victory Memorial Hospital; died November 3, aged 56, of carcinoma of the liver.

Carney, Joseph Albert, Lewistown, Pa.; Jefferson Medical College of Philadelphia, 1910; died November 1, aged 71, of cerebral hemorrhage.

Morgan, Roy, Springfield, Mass.; Western Reserve University Medical Department, Cleveland, 1909; member of the American Medical Association; retired superintendent of the Westfield (Mass.) State Sanatorium; died October 31, aged 70, of cerebral hemorrhage.

Noffsinger, Henry, Union City, Ind.; Eclectic Medical Institute, Cincinnati, 1884; died in Randolph County Hospital, Winchester, October 31, aged 91.

Pedersen, Hans Christian, Stirling City, Calif.; University of Nebraska College of Medicine, Omaha, 1905; served during World War I; past president of the Dodge County (Neb.) Medical Society; died in Chico October 28, aged 68.

Potter, William Wolcott, Mount Pleasant, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1906; died October 2, aged 72, of carcinoma.

Williams, Victor Hugo, San Antonio, Texas; Birmingham Medical College, 1908; member of the American Medical Association; served during World War I; formerly vice-president of the Medical Association of the State of Alabama; president of the Fourth District Medical Association of Alabama; secretary-treasurer of Walker County Medical Society; at one time on the staff of Walker County Hospital in Jasper, Ala., where he was on the school board; on the staff of the Santa Rosa Hospital; died September 11, aged 73, of coronary occlusion.

GOVERNMENT SERVICES

AIR FORCE

Alaskan Hospital News.—At the U. S. Air Force Hospital located at Elmendorf Air Force Base on the southcentral coast of Alaska, the regular program of professional educational and refresher activities has been augmented by a monthly "journal club," providing reviews of noteworthy scientific papers and editorials. Reviews are rotated among the members of the several services of the professional staff.

Bed capacity of the hospital is being expanded by the addition of four wards, now under construction. The first of these should be in operation early in 1952. Recent personnel additions to the hospital staff include Lt. Col. Raymond E. Dockery as hospital executive officer and Maj. Frances F. Kasmark as chief nurse.

Aviation Medicine Division Expands Duties.—The functions of the Aviation Medicine Division have been expanded within the office of the Surgeon General of the Air Force. In addition to work previously assigned, the division will now determine, evaluate, and review medical research requirements and implementation, as well as handle technical information for USAF Medical Service. On behalf of the professional services directorate, the division has maintained supervision of the aircrew effectiveness program and physiological training program. It monitors the Air Force program of preventive psychiatry, provides aeromedical liaison with the Director of Flight Safety Research, and evaluates the medical aspects of survival equipment and training.

DEPARTMENT OF DEFENSE

Priority 1 Officers Induction Postponed.—Induction calls for 333 riority 1 medical officers originally scheduled for August and r 152 originally scheduled for September have been postponed ntil February, 1952, by the Selective Service System at the request of the Department of Defense.

The Defense Department emphasized that this delay was possible only because of a sustained volunteer rate. Future inductions, it was stated, would depend on the volunteer rate and should there be insufficient volunteers to meet requirements for medical officers, it would be necessary to make up the shortage by induction.

Priority 1 medical officers are those physicians who received their medical education at government expense, or were deferred from service during World War II to attend school, and who have served less than 90 days in the Armed Forces, the Coast Guard, or the United States Public Health Service.

PUBLIC HEALTH SERVICE

Laboratory Refresher Courses.—Nine laboratory refresher courses covering the serology of syphilis, the Treponema pallidum immobilization test, and laboratory diagnosis of venereal disease will be conducted at the Venereal Disease Research Laboratory in Chamblee, Ga., during 1952. The courses start in January and are open only to senior technicians and to laboratory directors throughout the United States and the territories, who are presently employed in the field. The list of courses scheduled for the 1952 calendar year is as follows:

January 14-25, Serology of Syphilis
March 10-21, Serology of Syphilis
April 14-25, Serology of Syphilis
May 12-24, Serology of Syphilis
May 12-16, Laboratory Diagnosis of Venereal Disease (Directors Course)
May 19-23, Treponema Pallidum Immobilization Test (Directors Course)
September 8-19, Serology of Syphilis
October 13-24, Serology of Syphilis
November 3-21, Preparation and Use of Controls in Serologic Tests for Syphilis

Applications for these courses must be approved by the state health officer or state laboratory director of the region from which they are sent and should be addressed to: Director, Venereal Disease Research Laboratory, Division of Venereal Disease, Box 185, Chamblee, Ga.

More Communities Meet Restaurant Sanitation Requirements.—The number of Americans living in communities which have sanitation regulations for public eating and drinking establishments that meet standards developed by the Public Health Service has more than doubled in the last five years, Dr. Joseph W. Mountin, Chief of the Bureau of State Services, Public Health Service, announced December 3. Ordinances or other regulations meeting Public Health Service standards are now in effect in 675 municipalities and 346 counties in 42 states and the Territory of Alaska, as well as in the District of Columbia. The combined populations having this protection now total more than 82 million. In November, 1946, when the last tabulation was made, the combined populations affected totaled only 40 million.

The standard by which municipal or county regulation of eating and drinking establishments is judged is the "Restaurant Sanitation Ordinance Recommended by the Public Health Service" which was first issued in 1935 and revised in 1938, 1940 and 1943. Copies may be obtained from the Regional Offices of the Federal Security Agency, or they may be purchased from the Superintendent of Documents, Government Printing Office Washington 25, D. C.

MISCELLANEOUS

Research and Training Programs to Begin.—The 3½ million dollar appropriation for the National Science Foundation in the Supplementary Appropriation Act of 1952, signed by the President, will enable the foundation to start immediately on it two major operating programs: support of basic research in the sciences, and training of scientific manpower. According to Dr Alan T. Waterman, director of the foundation, about 1½ million dollars of the available funds will be allocated for the support of basic research in biology, medicine, mathematics, the physical sciences, and engineering. Basic scientific research wil in most cases be supported by means of research grants. A considerable number of research proposals have been received from investigators in all parts of the United States. Grants will b approved by the director and the 24-member National Scienc Board, whose chairman is James B. Conant, president of Harvard University.

Applications will be considered from students in the natura sciences who have or will have completed their undergraduat work in any accredited college or university. Fellows may attend any accredited nonprofit institution offering graduate studies i science which approves their application for admission. Inquirie should be addressed to the Fellowship Office, National Researc Council, Washington 25, D. C.

National Science Board Elects New Chairman.—Chester I Barnard, president of the Rockefeller Foundation, was elected chairman of the National Science Board of the National Scienc Foundation at its annual meeting in Washington Dec. 3, 1951 Mr. Barnard succeeds James B. Conant, president of Harvard University. Edwin B. Fred, president of the University of Wisconsin, was reelected vice-chairman of the board. The new chairman and vice-chairman were elected for two-year term of office as prescribed by the National Science Foundation Ac of 1950. The meeting on December 3 marked the beginning o the second year of operation for the National Science Foundation, which was created by Congress early in 1950. The directo and staff of the National Science Foundation have initiated programs in support of basic research in the medical, mathematica physical, engineering, and biological sciences. Applications ar also being received for National Science Foundation graduat fellowships for the academic year 1952-53 in the same fields The foundation expects to award about 400 such fellowships Applications may be secured from the Fellowship Office, National Research Council, Washington 25, D. C.

FOREIGN LETTERS

NORWAY

The Influence of Diet on Thrombosis.—Reference has already been made in THE JOURNAL (**143**:757 [June 24] 1950, and **146**: 213 [May 12] 1951) to Professor Axel Strøm's observation that in Norway the prewar rising mortality from diseases of the circulatory system was followed by a decline during the war. He suggested that the severe dietary restrictions entailed by the war were responsible for this blessing in disguise. His associate, Dr. R. Adelsten Jensen, has advanced a corollary thesis to the effect that the same dietetic restrictions reduced the postoperative incidence of thrombosis and embolism during the war. In a lecture at a meeting of the Norwegian Medical Society in Oslo on Sept. 19, 1951, he pointed out that his conclusions were based on 15,442 operations carried out at the Ullevaal and Aker hospitals in Oslo in the period 1940-1948. These operations were complicated by danger of thrombosis, as they involved structures located between the diaphragm and the floor of the pelvis. The thrombosis-embolism rate was about 20 per thousand for this period, the rate being somewhat higher for women than for men and rising with the patients' ages. The patients were classified by age groups; in the youngest, birth to 19 years, there was only one case of embolism. At the Ullevaal Hospital, the thrombosis-embolism rate was highest in the 40 to 59 age group (32.9 per thousand); at the Aker Hospital, this group had a thrombosis-embolism rate of 28.2 per thousand. Each year changes in the rate followed remarkably similar curves in the two hospitals, with a high level at the outbreak of the war in 1940, a rapidly falling rate during the war, and a definite rise after the war, when the nation's diet returned toward normal.

Dr. Adelsten Jensen discussed and then dismissed several alternative explanations of this phenomenon. Errors of diagnosis and registration or classification, changes in hospital routine, including variations in the duration of confinement to bed after operation, and differences in the age distribution of the patients and the nature of the operations they underwent were all found to be unlikely explanations for the U-shaped statistical curves. The most likely explanation is that the wartime diet had a profound influence on the coagulability of the blood. Dr. Adelsten Jensen suggests that this long-term, accidental experiment may be profitably checked by short-time, carefully planned research on hospital patients who have been put on restricted diets, such as slimming diets. In this way, it might be possible to determine the relative importance of a reduction of calories to the changes in the qualitative composition of a given diet.

The Danish Asthma Sanatorium in Norway.—Soon after the war, the Norwegian Red Cross invited the Danish Red Cross to send 80 Danish asthmatic children to Norway, where the inland mountain climate offered advantages not found in the lowlands of Denmark. The first group of children came to Norway in January, 1946, and responded so well to the change of climate that many of them were symptom-free in a few days. Even a considerable time after their return home, the cure was maintained in more than half the children. After the results of the Norwegian hospitality were ascertained, the Danes decided to carry on this scheme at their own expense, and the Asthma Committee of the Danish Red Cross acquired a temporary asthma home in a part of Norway a little above sea level. Here, it was noticed, the "asthma days" to which the children were subject coincided with the foggy days in the district. It was evident, therefore, that the ideal asthma sanatorium must be situated well above fog level, and in this case some 300 m. above sea level. In 1947, the Danes accepted an offer from the Kongsberg district and the Kongsberg Silver Mine of a site nearly 400 m. above sea level. It is situated in the center of southern Norway on an extensive plateau and has a dry inland climate and steady barometric conditions.

By 1949, the new sanatorium was well under way, and in 1950 it was officially opened by Crown Prince Olaf. It has three wings, with accommodation for 60 children and a staff of 17 adults. Contact with animals, likely to provoke asthma, is prevented, and there are no feathers in the building. Most of the children are examined at the allergy department of the Rigshospital in Copenhagen before they leave Denmark; if necessary, they are given specific inoculation treatment, which is resumed after their return to Denmark. In addition to ordinary schooling, the children are given occupational therapy in the form of carpentering for the boys and weaving for the girls. Factors likely to have a bad psychic effect are eliminated as much as possible; the children benefit from contact with fellow-sufferers as they avoid the inhibitions to which asthmatic children are subject when in contact with healthy children. During the four months' stay in the sanatorium the children are given a chance to break the vicious circle of alternating asthma and bronchitis. The ages of the children range from 5 to 13 years.

The Norwegian Mobile Army Surgical Hospital in Korea.—In a recent report on the Norwegian field hospital in Korea, after it had been functioning for more than six months, one of its medical officers, Dr. Bernhard Paus, pointed out that it is one of the six hospitals (the other five being American) serving as mobile army surgical hospitals close to the front. Although 70 to 80% of the patients were ambulant, needing only brief provisional treatment, the remaining 20 to 30% had severe cases and needed more radical treatment. Dr. Paus was impressed by the efficiency with which calls for blood for transfusion were met. The supply never failed, although it took many days for it to travel from American centers. The blood was 10 to 14 days old on reaching the hospital, and it was suitable for use for only a week. Four operating tables were available, and most of the housing was provided by tents covering a floor of sand brought from the nearest river bed. Many of the Mobile Army Surgical Hospitals were moved between 25 and 30 times.

On November 1, the hospital was taken over from the Norwegian Department for Foreign Affairs by the Defense Government. The head of the Norwegian Army Medical Service was put in charge of the administration of the hospital in consultative association with the Norwegian Red Cross. More than half of the staff was changed after the first six months in Korea; the new chief, Dr. Arne Hvoslef, relieved Dr. Herman Ramstad. The former recently studied in the U. S. A. the work of the American Army Medical Service. Some idea of the calls made on the Norwegian field hospital may be given by the fact that during the heavy fighting in October it dealt with more than 1,600 patients in the course of 12 days. Plans are already being discussed for the ultimate fusion of the medical units of the Scandinavian countries into a single permanent teaching hospital, which would be responsible for the training of Korean physicians as well as for the care of Korean patients.

BELGIUM

Radiological Congress.—The eighth congress of French radiologists took place in Brussels. Because the domain of the congress has been extended, its name has been changed to "First Congress of Radiologists of Latin Culture." Professor Maisin of Louvain acted as president, and Professor Vangehuchten presented the inaugural address.

One of the papers read was a report by Coquelet on the physiopathology of joints, a subject that he considers inseparable from the physiopathology of nerves and muscles; for example, the joints constitute a true peripheral regulatory system of tonus. The speaker reminded the audience that the synovial membrane is not an organ but a histiocyte connective tissue; hence, pathology of the joints is to a large extent pathology of connective tissue. Melot studied the chronic, nontuberculous joint lesions

---

The items in these letters are contributed by regular correspondents in the various foreign countries.

and attempted to correlate the clinical, anatomicopathological, and roentgenologic aspects of the bones with the roentgenologic aspects of the soft tissue. Lesions of rheumatoid arthritis and current, post-traumatic, hemophilic, and tabetic osteoarthrosis were studied and found to have the same roentgenologic aspect.

Leroux reported the results of his research on the examination of joints with the use of contrast media. He stressed the *significance of pictures taken of various knee movements.* Lateral movements, with the leg in extension, not only improved the arthrographic pictures but also permitted, in some instances, the study of normal and abnormal movements of the meniscuses. Anzilotti, Bollini, and Benassi discussed irradiation therapy of joint lesions in arthritis, arthrosis, and post-traumatic and periarthritic arthropathies. Bacq of Liège reported experiments that lend strong support to the concept that the action of the roentgen rays and ultraviolet rays on the enzymes, the cells, and the *organisms is not a direct physical action;* chemical substances or free oxidizing radicals (originating mainly from the effect of the rays on the water molecules) are in reality the responsible agents. Most of the action of the ultraviolet and roentgen rays is thus indirect.

Aid to Patients in Their Homes.—A new service has been undertaken by the Belgian Red Cross, which includes loan of sanitary material to patients cared for in their homes. It is for the use of patients with nonchronic disease, persons who have had accidents, and convalescents. The loan may include a hospital bed, bed table, bed pan, bed circle, wheel chair, or smaller items, such as air cushions, irrigators, syringes, or cupping glasses. In addition, certain specific apparatus, such as a walker for restoring walking activity and an apparatus for home delivery, are supplied. If the branch offices cannot furnish this equipment, application may be filed with the General Management of the Red Cross. A minimum rent is charged, and restitution must be guaranteed; however, loan may be granted without any fee on justified request. The material must be returned in good condition. There is a disinfecting station in every service office; approximately 100 offices are in operation throughout the country.

Legislation Dealing with Pneumonoconioses.—Decisions of medical concern were made by the government in regard to pneumonoconiosis as an occupational disease. The patient with pneumonoconiosis must show the following radiological and clinical symptoms in order to be considered as suffering from an occupational disease that will entitle him to draw compensation: 1. Roentgenologic signs: Either a picture of generalized micronodular or nodular fibrosis of the lungs, with or without signs of pulmonary tuberculosis, or a picture of one or several pseudotumoral fibrous formations in the lungs, with or without signs of pulmonary tuberculosis. 2. Clinical signs: Defective cardiac or respiratory function or poor general health caused by the aforementioned fibrotic process. The aforementioned clinical and roentgenologic signs may be considered as those of pneumonoconiosis, provided the worker has been employed for at least one year, or for several periods totaling at least one year, in work associated with the risk of inhaling noxious dust.

Disease of Boxers.—The *Bruxelles-Médical* recently published a paper by La Cava on a bizzare disease that occurs in boxers. The author named this disease traumatic cranioencephalopathy of boxers.

Three stages of the disease are distinguished as follows:

In the initial phase, after a fierce fight, (more rarely a "knockout"), the patient walks with a slightly incoordinated gait, appears to be confused, and complains of dizziness, incoordination, weakness, and headache. Examination reveals mydriasis, bradycardia, and amnesia. In the primary phase, within several days euphoria and megalomania develop. The patient's movements are uncoordinated (Romberg's sign), and he shows increased tendon reflex. In the secondary phase, psychic disturbances become aggravated; the patient is arrogant and irritable; he walks in a peculiar way. There is increased incoordination and dysarthria. In the tertiary phase, the memory is impaired, and the patient is abulic; his appearance is inexpressive, and his gait is uncertain and tottering. There is trembling, adiadochokinesia, dysarthria, and echokinesis (the patient spontaneously makes defensive gestures). At this stage, the patient is unable to fight. Differential diagnosis may be required to assure the physician that the patient is not suffering from chronic alcoholism, neurosyphilis, multiple sclerosis, or Parkinson's syndrome.

The author believes that this syndrome should be classified among the traumatic cranioencephalopathies, since roentgenography of the cranium reveals thickening toward the interior of the cranial wall and the clinical signs are similar to those of endocraniosis (intracranial hyperostosis). The condition is th sequel to repeated trauma. This is probably due to vasomoto disturbances of the circulation in the diploë after repeate trauma. It is, therefore, a polytraumatic cranioencephalopathy

Treatment of Cancer by Artificial Radio-Elements.—At th Center for Fight Against Cancer of the University of Lièg Hervé studied the influence of radioisotopes, radiophosphoru *and radioiodine in particular, in various diseases* and his resul are published in the *Revue Médicale* of Liège. He reported th P^{32} seems promising in chronic polycythemia and chronic leu kemia; it is definitely less useful in cases of lymphogranulom tosis, reticuloendotheliomas, and lymphosarcomas. I^{131}, in add tion to being most useful in the diagnosis of certain forn of thyroid cancer, may be used in the treatment of metastas (especially osseous) of these neoplasms. The author recogniz that P^{32} and I^{131} present real hazards and that conclusions to their therapeutic usefulness must be reserved.

MEXICO

Fifth Pan-American and Fourth Mexican Meetings of Urolog—At the Fourth Pan-American Urology Meeting, held in San ago de Chile in 1949, Mexico City was chosen as the place f the fifth meeting. The activities of the fifth convention, he in conjunction with those of the fourth Mexican Urology Co vention, took place from the 7th to the 13th of last Octob at the Hotel del Prado.

The agenda included the following topics: Traumatic injur of urethra: (*a*) Etiology and pathogenesis: Dr. Alberto García Argentina and Dr. Alejandro Palomo of Guatemala; (*b*) Dia nosis: Dr. Ricardo Angulo of Perú and Dr. Alfredo A. Figuer of Panamá; and (*c*) Treatment: Dr. Edward J. McCague of t U. S. A., and Dr. Carlos Aguirre of Mexico. Anuria: (*a*) Etiolo and pathogenesis: Dr. Jorge Lockhardt of Uruguay and Dr. berto Guevara Rojas of Mexico; (*b*) Diagnosis: Dr. Roberto G zález McOliver of Chile, and Dr. Luis A. Sanjurjo of Pue Rico; and (*c*) Treatment: Dr. Ernesto Puget Romanach of Cu and Enrique Arce Gómez of Mexico. Genitourinary tubercu sis: (*a*) Etiology and pathogenesis: Dr. Alvaro Cumplido de Sa Anna of Brazil and Dr. Herbert Lewy Van-Severen of Salvador; (*b*) Diagnosis: Dr. Gregorio Mendoza Catacora Bolivia; *and* (*c*) *Treatment:* Dr. Angel Quevedo of Mexico a Dr. Luis Rodríguez Santana of Venezuela.

Besides the official papers, more than 100 communicati were discussed in round table meetings. There were participa from most of the urologic associations of North, Central, a South America, including Dr. Campbell Colston, Dr. Baird, Ewell, Dr. Foldes, Dr. Maurer, Dr. Mitchell, Dr. Pearlm Dr. Rupel, Dr. Ware, and Dr. Van Duzen, from the *U. S.* Dr. Guerreiro de Faria, Dr. Couri, and Dr. Monteiro Silva, fr Brazil; Dr. Ercole, Dr. González, Dr. Irazu, and Dr. Vilar, fr Argentina; Dr. Blondet and Dr. Nicolini, from Perú; Dr. Igles de la Torre, Dr. Portilla, Dr. Rodríguez Montoya, and Dr. V asco Ruiz, from Cuba; Dr. Bianchi, Dr. Pacheco Díaz, and Vargas Salazar, from Chile. *Furthermore,* the Sociedad M cana de Urología invited as special guests Dr. Robert Gouvern from Paris and Dr. Alfonso de la Peña from Madrid. Seve exhibitions, scientific and commercial, and many social activi were part of the program. The official transactions of the c gress will be published sometime before the spring of 1951.

CORRESPONDENCE

SILICON GRANULOMA OF SKIN

To the Editor:—THE JOURNAL for Oct. 20, 1951 (page 751) presents an article by Drs. Ginsberg and Becker entitled "Silicon Granuloma of Skin Due to Traumatic Sand Inoculation." This article is admirable in that it provides an excellent description of a pathologic condition probably of frequent occurrence but rarely recognized by the medical profession.

Possibly the choice of some terminology is unfortunate. Silicon, the element, does not exist in nature and could not even remotely lead to granulomas. Its implied identification with sand may not be warranted. Silicon, the element, is produced in electric furnaces, in fair tonnage, and is used in such industries as aluminum smelting and recovery. Silicon presently is regarded as one of the most inert of all substances. Silica granulomas readily may appear, but silica is silicon dioxide. As between silicon and silica there is a striking dissimilarity in physiologic response. Silica readily produces tissue proliferation as described, but silicon is inert. Since, from time to time, spurious medical legal claims arise alleging pulmonary damage from elemental silicon, industrial toxicologists consistently seek the recognition that silicon and silica are not identical. On this basis, it is to be hoped that the term "silicon granuloma" may not be used to designate "silica granuloma."

CAREY P. MCCORD, M.D.
Institute of Industrial Health
University of Michigan, Ann Arbor.

EXPIRATORY PRESSURE

To the Editor:—Dr. Alvan L. Barach stresses the importance of expiratory pressure breathing with pursed lips in his article "Remissions in Bronchial Asthma and Hypertrophic Pulmonary Emphysema" in THE JOURNAL of Oct. 20, 1951. The fact that the importance of respiratory exercises as a therapeutic measure is explained by Dr. Barach, a student of great experience in respiratory therapy, is to be greatly appreciated. Long personal experience taught me that respiratory exercises are a fundamental part of the treatment of patients with bronchial asthma and pulmonary emphysema.

While not intending to detract from Dr. Barach's splendid article, I wish to point out that I have used expiratory pressure breathing with pursed lips with success in cases of bronchial asthma and pulmonary emphysema in the years before 1935 (Respiratory Therapy and Physical Exercise, *Wien. klin. Wchnschr.* 48:392 [March 29] 1935). I used this expiratory technique as a therapeutic measure after favorable personal experiences during sport activities and by observations of the physiologist Durig (Vienna), who observed this kind of expiration in lumbermen and miners. Apparently my article escaped Dr. Barach's attention. It is not mentioned in the literature cited by him.

KARL SCHUTZ, M.D.
Veterans' Camp, Mount McGregor, N. Y.

APPLICATION OF THE "RHYTHM" METHOD OF FAMILY PLANNING IN AN ILLITERATE POPULATION

The "rhythm" method of family planning requires the use of thermometers, calendars, charts, numerals, and words. Such a system cannot be used in countries like India, where the major part of the population is illiterate. Simpler technique, requiring neither reading nor writing, must be taught. An easy method, utilizing beads of bright colors, is described.

An abacus is employed with six threads or lines, each strung with 30 beads corresponding to the 30 days of a calendar month. The entire abacus covers a period of six months. Beads of three colors are used: (1) one red bead for each day of menstruation, (2) one green bead for each day of safe period, and (3) one black bead for each day of fertile period.

The first two lines of the abacus denote the preliminary training period. The patient is taught to thread one bead each day, red for menstruation and green for intermenstrual days. At the end of this period she is asked to report. The third line of the abacus is threaded by one of the personnel of the clinic. The approximate date of ovulation is calculated and the fertile period indicated by black beads. Usually the 12th to the 20th day of a 28-day menstrual cycle is considered the fertile period. This time may be extended to include the 10th to the 22nd day for a greater margin of safety. As she counts off each day, a bead is moved to the left and a string tied to mark off the day of the cycle. This is repeated daily, and the tie is moved progressively to the right, bead by bead. When the indicating string reaches the black bead, the patient is warned of the danger period. Four such cycles are carefully checked at the end of each menstrual period. By this time the person concerned is expected to master the technique.

This is the simple method now in use for teaching illiterate persons in the rhythm method of family planning at the clinic in the Lady Hardinge Medical College Hospital, New Delhi, India.

ALICE THOMAS, M.B.
Lady Hardinge Medical College
New Delhi, India.

PHYSICIAN-PATIENT RELATIONSHIP

To the Editor.—From day-to-day conversations with patients, it is my impression that the average patient does not favor government medicine, but he at times is disgusted with the average physician. On this account, some patients feel that government intervention in the field of medicine might help matters (how I do not know).

The chief gripe, especially in the larger cities, is that, owing to specialization, the physician never really gets to know his patient. As one woman told me, "I had been going regularly to an obstetrician for about seven months when I suddenly developed severe gallbladder colic, which I recognized, having had it before. I called the obstetrician and asked for assistance, giving my name, etc. His first question was 'Are you pregnant?' When assured in the affirmative, and that he had been attending me for seven months, he referred me to another specialist. We are starved for physicians who at least know us, even if they don't know us as well as the old family doctor used to!"

We are all conversant with the fact that medical care today is far superior to that of 20 years ago. We know of the great advantages to the patient which result from group practice, rendering all of modern science's diagnostic and therapeutic methods available to anyone who needs them. What we have lost sight of is that the patient is a human being, not a machine out of tune. We cannot afford to deceive ourselves into thinking that we can treat the body and ignore the psyche.

Any rational general practitioner will readily admit the need for specialists, and does not hesitate to refer any diagnostic or therapeutic problem to the indicated specialist. What we have to correct is the overemphasis on specialization and recognize the need of the patient for someone who inspires confidence in him by knowing him like a book.

Physicians in general must lose their condescending attitude and hurried manner in addressing patients. Patients sense and resent a feeling of superiority on the part of the doctor, and can you blame them? The garage mechanic in this town can tell me pretty nearly as much about my car as I can tell him about his body, but he does not act superior about it.

As for fees, this is a touchy subject and avoided in most medical publications. Let us just say that we must keep them reasonable, fair, and equitable. I know that Johnny Jones does not care whether I come in a Cadillac or in an old Chevrolet—just as long as I get there when he needs me.

HENRY C. EICHELMANN, M.D.
1419 Zerega Ave.
New York 61.

MEDICAL MOTION PICTURES

Trigeminal Neuralgia: 16 mm., color, sound, showing time 28 minutes. Produced in 1950 by and procurable on loan from Robert Dean Woolsey, M.D., 16 Hampton Village Plaza, St. Louis 9.

This film concerns not only the preoperative and postoperative phases of several patients suffering from trigeminal neuralgia but also the operation itself. The explanation and description of the operation are amplified by means of diagrammatic sketches of the anatomy and of the stages and steps of the operation.

The film opens with a long interview with one of three patients suffering from trigeminal neuralgia. During this interview the patient recites the complete history of previous diagnoses and treatment by other doctors, none of which had proved satisfactory. Two other patients are shown and described. Operative procedure is then shown in diagram with scale pictures of the operative site, followed by the actual operative procedure. The technique of selective cutting of the fifth cranial nerve for trigeminal neuralgia with preservation of the ophthalmic branch and of the motor root is demonstrated. The postoperative pictures are shown, with particular emphasis on the regularity of the sensory levels procured.

It is regrettable that the author does not explain why he has the first patient describe previous diagnoses and treatment in such detail. If the author wished to emphasize by this means that in many cases diagnosis is most unwarrantably delayed, that reason should have been specifically stated. Without such an explanation this seems extremely long and pointless.

The operation is satisfactorily performed, and in some instances the visibility is exceptionally good, considering the difficulties under which it is carried out. The sequences showing postoperative tests on all three patients for anesthesia and the mapping out of the areas on the faces might well have been shortened by confining the procedure of testing to one patient and showing the others after the mapping was completed. The demonstrations of closure might also have been shortened.

It seems debatable whether, as is mentioned, 95% of trigeminal neuralgia occurs in the maxillary and mandibular divisions. No mention was made of the point that there are recurrences, especially in the spared ophthalmic fibers, particularly when those fibers were involved before operation. In general, this is a good teaching film and should be of interest to general practitioners, interns, residents, and medical students. The photography and narration are fair to good.

Splenectomy: 16 mm., color, silent, showing time 23 minutes at sound speed. Produced in 1951 by and procurable on loan or purchase from Philip Thorek, M.D., 25 East Washington St., Chicago 2.

This film demonstrates a technique for splenectomy in a case of hypersplenism. The importance of a primary ligation of the splenic artery to control bleeding is stressed. The film opens with a history of the patient to be operated on and the indications for splenectomy. The embryology and the surgical anatomy involved are well demonstrated by colored, animated illustrations. The actual operation is then shown, and the important steps are effectively emphasized by colored illustrations. The pathology is well shown, and the important structures involved in the actual operation are clearly pointed out. The surgical technique employed is good. Although the film could be shortened to advantage, it has good captions, and the photography is excellent. This picture is highly recommended for showing to general practitioners, specialists, residents, interns, medical students, and nurses.

The Key Area (Attic-Aditus-Antrum) in the Chronic Mastoid: 16 mm., color, sound, showing time 20 minutes. Prepared by Gilbert Roy Owen, M.D., Los Angeles. Produced in 1951 by and procurable on rental or purchase from Billy Burke Productions, 7416 Beverly Blvd., Hollywood 36.

This is an attempt to demonstrate graphically the various roentgen projections presently used, all of which inevitably connote, in some degree, distortion of our anatomic teachings. It is probable that the greater the familiarity with the surgical-anatomic picture, the greater the problem of adjusting to such distortions. To this end, the author has attempted to show in the film the nearest possible application of our anatomic memo
pattern of the key area. This projection is submitted—not as
modification or a substitute—but as an amplification of th
classic Mayer position.

The material is excellent, and the idea and results are goo
The new projection is good, but there is a question as to whethe
a motion picture is the best way to present a subject of this typ
A good set of lantern slides might be more effective. This is
highly technical, highly specialized film of interest only to otolo
gists and x-ray technicians who specialize in taking radiograph
of the ear. In order to understand the content of this pictu
fully, repeated showings will be necessary.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Hospitals, in General: Doctrine of Res Ipsa Loquitur.—T
plaintiff sued for damages resulting from burns alleged to ha
been caused by the negligence of the defendant's hospital. Fr
a judgment for the plaintiff, the defendant appealed to
Supreme Court of Florida.

The plaintiff was admittted to the defendant's hospital duri
a diabetic coma, and while she was in the hospital and unc
scious, she received the burns of which she complains. The
fendant contended that there was no evidence that heat
applied to the plaintiff's body in the hospital or, if applied, t
it was done negligently, or that the negligent use of heat pr
mately caused the injury and that therefore the doctrine of
ipsa loquitur did not apply. There was ample proof, said
Supreme Court, to justify a conclusion that the plaintiff's bu
were not received before she reached the hospital and that t
were received while she was completely helpless and sensel
in the hospital. The chief of staff of the hospital, who trea
the plaintiff, testified that he was sure the injuries could
have resulted from anything he had done or ordered done,
he was at a loss to understand how they had occurred.

Negligence may not be presumed, said the court, it must
proven. Where direct proof is wanting, however, and such
cumstances are shown as to leave no conclusion except that
defendant was at fault, a prima facie case may arise justify
the application of the rule of res ipsa loquitur. In a prior supre
court case, the court said "Establishment of the facts that
instrument causing the injury was in the sole control of
defendant, that the occurrence would not have happened in
ordinary course of events had there been proper care on
defendant's part, provides evidence that the injury sprang fr
the defendant's negligence."

This statement, continued the Supreme Court, fits the f
of the present case. There is abundant proof that the plai
was injured while in the hospital. She could not testify dire
about the experience for the obvious reason that she was
conscious. The persons within the hospital immediately char
with her care, protection, and treatment—the chief of staff
the nurses—were patently nonplussed over her mishap. C
tainly, said the court, the instrument that caused her injury
in the absolute control of the personnel of the institution,
the plaintiff did not know and could not have known what ap
ratus was used in injuring her. All this, the court conclu
indicates an "occurrence [that] would not have happened in
ordinary course of events had there been proper care" on
part of persons in the hospital who, although not dire
assigned to the plaintiff's case, had, nonetheless, access to
room and to the hospital equipment. We think that the circ
stances justify an inference that, while unconscious in a do
strictly the defendant's, the plaintiff was burned by some ins
mentality which was negligently used or which should not
been used at all and that consequently the doctrine of res
loquitur was properly invoked. Accordingly the judgment of
trial court in favor of the plaintiff was affirmed.—*West C*
Hospital Association v. Webb, 52 So. (2d) 803 (Fla., 1951).

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

64:385-532 (Oct.) 1951. **Partial Index**

*Etiologic and Immunologic Concepts Regarding Sarcoidosis. A. Rostenberg Jr.—p. 385.
Generalized Miliaria Rubra Associated with Abnormal Vitamin A Metabolism. W. C. Lobitz Jr. and R. R. Kierland.—p. 411.
Early Dermatologic Illustration. J. T. Crissey.—p. 417.
Cysteine as Local Protective to Human Skin Against X-Rays. A. H. Slepyan and T. Cornbleet.—p. 425.
Results of Treatment of Acne Vulgaris by Intramuscular Injections of Vitamin A. G. H. Mitchell and T. Butterworth.—p. 428.
Effective Application of Banthine® in Dermatology. C. S. Brown and I. L. Sandler.—p. 431.
Idiopathic Hyperlipemia with Secondary Xanthomatosis: Report of Case. L. Frank and L. M. Levitt.—p. 434.
Results of Topical Application of Cortisone in Congenital Syphilitic Interstitial Keratitis: Preliminary Report of Two Cases. S. Maddin and J. L. Danto.—p. 437.
Occupational Leucoderma from Rubber Dust and Debris. S. J. Zakon and A. L. Goldberg.—p. 441.
Evaluation of New Drug for Topical Therapy of Tinea Capitis. E. Edelson, C. Craster and A. Haskin.—p. 444.
Capillary Resistance Tests. F. W. Hare Jr. and A. J. Miller.—p. 449.
Acne Necrotica: Relation to Acne Necrotica Miliaris and Response to Penicillin and Other Antibiotics. C. Stritzler, R. Friedman and A. B. Loveman.—p. 464.
*Cutaneous Hypersensitivity Due to Beryllium: Study of 13 Cases. G. H. Curtis.—p. 470.
Multiple Miliary Osteomas of Skin. R. G. Carney and C. E. Radcliffe. —p. 483.
Intradermal Leishmanin Test (Montenegro Test) in Diagnosis of Cutaneous Leishmaniasis: Report of Case of Chiclero Ulcer Diagnosed in California. P. Fasal and A. Gradow.—p. 487.
Coincident Infection of Human and Anthropoid with Microsporum Audouini: Report of Case. J. P. Scully and A. M. Kligman.—p. 495.
Green Nails: Role of Candida (Syringospora, Monilia) and Pseudomonas Aeruginosa. M. Moore and M. D. Marcus.—p. 499.

Concepts of Causation of Sarcoidosis.—After reviewing the evidence for and against the tuberculous origin of sarcoidosis, the author concludes that the tuberculous causation of sarcoidosis is most unlikely. Failure to distinguish systemic sarcoidosis from a sarcoid type of cutaneous tuberculosis with positive bacillary findings has resulted in much confusion; consequently the necessity for differentiating these two types of lesions is stressed. Regarding the view that sarcoidosis is not an etiological entity but can be caused by a variety of agents, it should be realized that certain of the arguments and observations, especially those based on negative bacteriologic findings, given against tuberculosis are applicable against any known infectious agent. Thus, by exclusion one is more or less forced to the view that sarcoidosis may be caused by a new infectious agent. A chief argument for the tuberculous origin is the relative anergy to tuberculin of many patients with sarcoidosis, but the theory of "positive anergy" is neither theoretically nor experimentally substantiated. It is reasonably well established that systematized sarcoidosis involves the lymphoreticular structures of the body, suggesting a reticuloendothelial blockade in this disease. Experimental animals with adequately blocked reticuloendothelial systems are less able to produce antibodies and to react to antigens. That this may also be true of patients with sarcoidosis is intimated by their failure to show cutaneous hypersensitivity to BCG inoculation. A tuberculin-neutralizing substance may be found in the serum of patients with sarcoidosis. The author suggests that, if this substance is an antibody, it does not arise in response to the tubercle bacillus but as a result of stimulation by some other micro-organism. An analogous situation occurs in various rickettsial diseases, in which the micro-organismal antigen causes production of agglutinins capable of reacting with an organism unrelated to the etiological agent of the infection.

Hypersensitivity to Beryllium.—The occurrence of dermatitis caused by beryllium compounds in 13 workers employed in two beryllium-extraction plants is reported. The dermatitis was caused by beryllium fluoride in 10 furnace operators, by ground metallic beryllium in 2 bottling machine operators, and by water drippings from the surface of overhead pipes coated with dust of various beryllium compounds in 1 worker. The men frequently did not wear masks and gloves, so that the dust was inhaled as well as deposited on the skin. Conjunctivitis and rhinopharyngitis developed in 8 of the 13 patients. Occasionally, hot particles striking the skin produced acute inflammatory papules and ulcerations on the face, neck, and arms. Patch tests with beryllium compounds were performed in the 13 patients and on 16 volunteer controls who never had been exposed to beryllium compounds. The clinical, histological, and experimental criteria for establishing the dermatitis as an allergic-eczematous type were fulfilled in the 13 patients. Eight of the 16 controls showed spontaneous eczematous reactions 6 to 16 days after the patch tests. Subsequently, eczematous reactions were produced in 48 hours by higher dilutions than the sensitizing concentrations. Pure beryllium is insoluble in sweat and therefore cannot be used for patch tests. Therefore, salts of beryllium had to be used, and anions, acidity, and primary irritancy of soluble beryllium compounds were eliminated as direct factors in clinical dermatitis. The beryllium ion is believed to be the sensitizing allergen. Beryllium fluoride can sensitize the skin to a high degree, which accounts for the high incidence of dermatitis among workers in the fluoride process of beryllium extraction. Beryllium sulfate and beryllium chloride have less capacity than beryllium fluoride to sensitize the skin, while beryllium nitrate was observed to have little or no capacity to sensitize the skin under the conditions of these experiments. For patch tests, 1% or 2% unbuffered solutions of beryllium fluoride, beryllium sulfate, beryllium chloride, beryllium nitrate, beryllium ammonium fluoride, beryllium oxalate, and beryllium benzenesulfonate are suitable. It is suggested that mucous-membrane manifestations and possibly acute pneumonitis may be allergic reactions to beryllium compounds.

A.M.A. Arch. Ophthalmology, Chicago

46:235-362 (Sept.) 1951

Terramycin in Treatment of Trachoma. Yukihiko Mitsui, Chie Tanaka, Hitoshi Toya and others.—p. 235.
Horizontal Squint with Secondary Vertical Deviations. M. J. Urist. —p. 245.
*Effect of Systemic Cortisone and Corticotrophin (ACTH) on Experimental Herpes Simplex Keratitis. J. W. Hallett, I. H. Leopold and C. G. Steinmetz.—p. 268.
Induced Ocular Tuberculosis: Report of Probable Case. W. O. Linhart. —p. 271.
Analysis of Methods for Measuring Diplopia Fields: Introduction of Device for Such Measurements. A. E. Sloane.—p. 277.
Analysis of Ocular Movements by Means of Electrical Method. R. J. Brockhurst and K. S. Lion.—p. 311.
Study of Ocular Movements Under Stress. K. S. Lion and R. J. Brockhurst.—p. 315.
Alopecia Associated with Intraocular Foreign Body: Report of Case. H. McGrath.—p. 319.
Rate of Flow of Aqueous Humor in Normal and Scorbutic Guinea Pigs E. Bárány.—p. 326.

Systemic Cortisone and Corticotropin in Herpes Simplex Keratitis.—To study the effect of cortisone and corticotropin on virus diseases in general, and herpes simplex in particular, Hallett and associates supplemented their unsuccessful experiments on local cortisone treatment in herpes simplex infections of the rabbit cornea with further experiments utilizing systemic cortisone and corticotropin therapy. In 24 rabbits both corneas were anesthe-

---

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

tized with a drop of 0.5% tetracaine hydrochloride solution. Three linear, superficial, vertical incisions were then made through the corneal epithelium with a Graefe knife. A drop of macerated chorioallantoic membrane from a chick embryo infected with herpes simplex virus was then instilled into the inferior cul-de-sac of each eye. Immediately after corneal inoculation, eight rabbits were given 9 mg. of cortisone acetate daily intramuscularly in divided doses for four days, and then in a single dose for the next three days. Another group of eight rabbits received identical treatment with corticotropin. The third group of eight rabbits constituted the untreated controls. There was no difference between the rabbits receiving cortisone and the corticotropin-treated animals. The controls showed severer involvement up to the fifth day; from then on the treated and the control groups showed almost the same degree of involvement. Thus it may be concluded that both corticotropin and cortisone systemically administered have an identical retarding effect, up to the fifth day, on experimental herpes simplex infections of the rabbit cornea. This is in contrast with the lack of benefit, or even deleterious effect, of local cortisone therapy.

Alabama State Medical Assn. Journal, Montgomery

21:53-80 (Sept.) 1951

Intravenous Demerol and Scopolamine in Management of Labor. A. M. Cowden.—p. 53.
Carcinoma of Skin. K. F. Kesmodel.—p. 56.
Consideration of Hematuria. J. W. Davis Jr.—p. 62.

American Journal of Medicine, New York

11:271-408 (Sept.) 1951

Relationship Between Acidification of Urine and Potassium Metabolism: Effect of Carbonic Anhydrase Inhibition on Potassium Excretion. R. W. Berliner, T. J. Kennedy Jr. and J. Orloff.—p. 274.
Low Potassium Syndrome Due to Defective Renal Tubular Mechanisms for Handling Potassium. D. P. Earle, S. Sherry, L. W. Eichna and N. J. Conan.—p. 283.
Renal Tubular Acidosis with Osteomalacia: Report of Three Cases. K. L. Pines and G. H. Mudge.—p. 302.
Clinical Recognition of Pyelonephritis, with New Stain for Urinary Sediments. R. Sternheimer and B. Malbin.—p. 312.
.spiration Biopsy of Kidney. P. Iversen and C. Brun.—p. 324.
[illegible] Pectoris: Clinical and Pathologic Correlation. P. M. Zoll, S. Wessler and H. L. Blumgart.—p. 331.
Lipoproteins in Atherosclerosis. H. B. Jones, J. W. Gofman, F. T. Lindgren and others.—p. 358.

Aspiration Biopsy of Tumor Tissue.—Although aspiration biopsy of tumor tissue is a classic procedure, the liver and spleen are the only parenchymatous organs that have been examined by this method. Aspiration biopsy of the kidney has been performed only in the course of surgical treatment of hypertension, but no biopsy investigations in intrinsic renal disorders have been reported. Iversen and Brun suggest that renal biopsy techniques will be of value in the study of mild renal disorders that are rarely seen at autopsy and in the initial stages of severe, acute renal disorders. Biopsy will be particularly helpful in acute anuria associated with such conditions as shock, uteroplacental damage, poisoning with sulfonamides or corrosive sublimate, and enteritis. At present all these conditions are classified as lower nephron nephrosis, but the validity of such a generalization is doubtful, and a closer investigation of the histological changes in milder, nonfatal cases is needed. The instruments used for biopsy of the kidney are the same as those used for liver biopsy. Pyelography is performed before a biopsy is made. The needle is inserted nearly to the surface of the kidney, according to the distance measured in the pyelogram; the stylet is removed, a syringe and needle are assembled, and the piston is pulled back and secured with the fixation device. The needle is pushed in by screwing it another 3 or 4 cm. into the tissue, and then the needle and syringe, in which the vacuum is retained, are pulled out. The barrel of the syringe, as a rule, contains a cylinder of renal tissue from 10 to 20 mm. long. The specimen is fixed immediately. Eighty biopsy attempts have been made in 66 patients. Sufficient kidney tissue to permit histological examination was obtained in only 42 cases. Most of the failures occurred in the beginning. With greater experience, the authors are now successful in at least two-thirds of cases. Complications other than transient hematuria have not occurred in any case.

American Journal of Pathology, Ann Arbor, Mich.

27:761-918 (Sept.-Oct.) 1951

Characteristics of Stellate Inclusions in Giant Cells and Associated Tissue Reactions. J. A. Cunningham.—p. 761.
Histoplasmosis and Malignant Lymphoma. J. F. Murray and F. A. Brandt.—p. 783.
Lymphosarcoma of Prostate. L. S. King and T. R. Cox.—p. 801.
*Nature of Diffuse Intimal Thickening of Arteries. S. L. Wilens.—p. 825.
Glomerular Thrombosis. D. B. Jones and W. E. Loring.—p. 841.
Renal Lesions Associated with Experimental Diabetes in the Rat. G. V. Mann, J. W. Goddard and L. Adams.—p. 857.
Transformation of Hepatic Vasculature of Rats Following Protracted Experimental Poisoning with Carbon Tetrachloride: Its Possible Relation to Formation of Urate Calculi in Urinary Tract. H. Ungar. —p. 871.
Senecio Poisoning Exhibiting as Chiari's Syndrome: Report on 12 Cases G. Selzer and R. G. F. Parker.—p. 885.
Graphite Pneumoconiosis. F. A. Jaffé.—p. 909.

Diffuse Intimal Thickening of Arteries.—Most authors do not consider diffuse intimal thickening a part of the atherosclerotic process, since it may be found without lipid deposition. It occurs early in life, long before any evidence of atherosclerosis can be found, and also in the absence of visible intimal lipid streaks Nevertheless, several circumstances suggest that this intima change may be an early but consistent and integral part of the atherosclerotic process. This report presents evidence for thi view. Diffuse intimal thickening is more pronounced in arterie that commonly develop atherosclerosis than in those that are involved infrequently. It is greater in portions of the aorta where atherosclerotic plaques develop frequently than where they rarely occur. Diffuse intimal thickening of the aorta increases progressively throughout life and is more pronounced in men tha in women. It is increased in the presence of hypertension. Diffus intimal thickening of the aorta does not occur in species i which atherosclerosis does not develop spontaneously. Whe cholesterol-fed rabbits are given a normal diet for protracte periods before being killed, fibrous intimal thickening of th aorta occurs that is analogous to that of man. Lipid stains o the diffusely thickened aortic intima often reveal small deposit of lipid. These observations suggest that consistent diffus overgrowth of intimal tissue early in life is not a natural developmental phenomenon but is related to the mechanism tha eventually leads to formation of atherosclerotic plaques. Thi interpretation suggests that atherosclerosis is not limited to scattered areas of the arterial intima but involves the entire intima

American Journal of Psychotherapy, New York

5:337-494 (July) 1951. **Partial Index**

Hypothesis Regarding Scope and Limitations of Psychotherapy. G. Hoi mann.—p. 339.
Few Notes on Hypertension. S. Lowy.—p. 362.
*First Aid in Acute Panic States. J. A. M. Meerloo.—p. 367.
Office Management of Functional Gynecological Disorders. F. Wengra —p. 372.
Current Trends in Group Psychotherapy. L. Wender.—p. 381.

First Aid in Acute Panic States.—Experiences during the wa in the Netherlands and in Britain convinced Meerloo that eve in persons well prepared for disaster, extreme danger tends t provoke all kinds of mental defense reactions. Catastrophes lik earthquakes, railway accidents, or direct bomb hits may induc a state of infantile regression. Two types of panic behavior ar generally observed; the first is a state of mental paralysis i which the patient is apathetic, cannot talk and cannot move, an appears to be dead, except for the fright that shows in his eye. He does not consciously listen, though his body contracts a every noise. This so-called cataleptic reaction may communicat fear to others. The second type of panic reaction takes the form of temper tantrums, like those in an angry child. A soldier wit this form of panic may attack his fellow soldiers or shoot at hi own troops. A woman may begin to cry, shout, or walk aimlessly about, wringing her hands. Most variations of such fea reactions involve psychosomatic conversions, examples of whic are painful but brief vasoconstriction and frequent urinatio An explanation of the cause of these reactions has a sedati effect on the patient. The physician who might be called upo to treat large numbers of mentally disturbed victims should ha a simple scheme of treatment ready. A hostile attitude toward panicky person may increase the panic. Persons obsessed by fe may react to sedatives in an unexpected way. Alcohol may have a good effect, but it may also provoke a pathological reaction. Barbiturates often make the panicky patient more excited. In cases in which concrete therapy as well as reassurance is needed, aspirin or bromides will suffice in most cases. Oral satisfaction, in the form of hot coffee, soup, or cigarets, may be more effective than any narcotic. Mental first aid in the form of hypnosis or first aid catharsis may prevent the development of deeper neurotic involvement.

Annals of Allergy, Minneapolis

9:563-702 (Sept.-Oct.) 1951

SYMPOSIUM ON NASAL ALLERGY

Nasal Function and Nasal Neurosis. E. A. Brown.—p. 563.
Role of Food Sensitivity in Nasal Allergy. H. M. Davison.—p. 568.
Use of Cortisone and ACTH in Management of Nasal Allergy. G. A. Koelsche, C. K. Maytum, L. E. Prickman and H. M. Carryer. —p. 573.
Miscellaneous Inhalants and Molds. H. E. Prince.—p. 575.
Surgical Management of Nasal and Sinus Allergy. O. E. Van Alyea. —p. 585.
*Observations on Use of ACTH and Cortisone in Treatment of Asthma, Hay Fever, and Other Allergic Conditions. A. S. Friedlaender and S. Friedlaender.—p. 588.
Adrenocorticotropic Hormone (ACTH): Effect on Ragweed Hay Fever. M. Zeller.—p. 603
Absorption of One Per Cent Chlorcyclizine Hydrochloride Cream Through the Skin. A. E. Light and J. A. Tornaben.—p. 607.
Treatment of Allergic Headache. H. D. Ogden.—p. 611.
Cafergot Suppositories in Migraine. M. Fuchs and L. S. Blumenthal. —p. 616.
Tropical Eosinophilia and Its Possible Relationship to Loeffler's Syndrome and Periarteritis Nodosa. V. P. De Zoysa.—p. 621.
Occurrence of Bacterial Respiratory Infections Resembling Epidemic Coryza in Allergic Patients: Etiology and Treatment. F. A. Stevens and E. Gordon.—p. 634.
Cold Urticaria: Investigations Concerning Its Pathogenesis. E. Rajka and A. Asboth.—p. 642.
Psychotherapy in Multiple Sclerosis: Part IV. H. D. Jonez.—p. 653.
Some Psychological Aspects of Treatment of Patients Who Have Food Allergies. W. Kaufman.—p. 660.
Hypoallergic Penicillin: III. Histadyl-Penicillin. S. W. Simon.—p. 665.
Comparison of Anamnestic and Perennial Therapy in Management of Allergic Respiratory Disease. L. E. Abram and J. S. Frankel.—p. 669.

Corticotropin and Cortisone in Allergic Conditions.—Corticotropin (ACTH) or cortisone was given to 91 patients with various allergies, of whom 41 had asthma, 32 hay fever and 18 other allergic conditions, such as atopic dermatitis, contact dermatitis, urticaria, and angioneurotic edema. Of the 41 patients with asthma of 2 to 30 years' duration, 21 were hospitalized. Ten of these were given an initial course of corticotropin by intramuscular injection in total doses of 600 to 870 mg. administered over 6 to 13 days. Good results were obtained in 6, fair results in 2, and poor results in the other 2. Eleven patients were given an initial course of cortisone in daily doses of 300 mg. by intramuscular injection, with good results in four, fair results in four, and poor results in three. The remaining 20 ambulatory patients were given daily doses of 100 to 200 mg. of cortisone orally, with good results in 13, fair results in 3, and poor results in 4. The effects of corticotropin and orally administered cortisone were more quickly evident than those of parenterally administered cortisone in suspension. The effects of orally administered cortisone were more transient. The remissions induced in bronchial asthma by initial courses of corticotropin and cortisone were generally of brief duration, with symptoms recurring in their original severity within a few days or weeks. While the response to repeated courses was frequently as good as to the initial course, symptoms tended to recur more quickly and severely after successive courses. Of the 32 patients with seasonal hay fever, 14 obtained relief from symptoms by intensive administration of corticotropin at six-hour intervals, large single daily injections of cortisone suspension, and administration of cortisone orally every four hours. Of 11 patients with atopic dermatitis treated with corticotropin or cortisone, good results were obtained in 2, fair results in 6, and poor results in 3. Satisfactory results were obtained in two patients with contact dermatitis and in four with angioneurotic edema, while results were poor in one patient with urticaria. Hormonal and metabolic side-effects observed were fluid retention with edema, acne, menstrual dysfunction, adrenal insufficiency, and psychic disturbances. Corticotropin and cortisone may be used to advantage as adjuncts in temporary alleviation of severe symptoms associated with hypersensitivity. The advisability of using the hormones for long periods in such conditions is questionable.

Annals of Internal Medicine, Lancaster, Pa.

35:499-762 (Sept.) 1951. Partial Index

Cardiac Symptoms. J. Parkinson.—p. 499.
Clinical and Laboratory Observations on Autoimmune Hemolytic Disease. L. E. Young, G. Miller and R. M. Christian.—p. 507.
*Cobalamin (Vitamin B_{12}) and Intrinsic Factor of Castle. F. H. Bethell, M. E. Swendseid, S. Miller and A. A. Cintron-Rivera.—p. 518.
Use of Cation Exchange Resins in Clinical Situations. T. S. Danowski, L. Greenman, J. H. Peters and others.—p. 529.
Place of Electrocardiogram in Cardiac Diagnosis. F. F. Rosenbaum. —p. 542.
Mediastinal Emphysema Occurring with Therapeutic Pneumoperitoneum: Report of 10 Cases. M. N. Towbin.—p. 555.
Pulmonary Changes Related to Cardiospasm. R. A. Lake.—p. 593.
*Coronary Sclerosis and Pulmonary Hypertension. E. H. Drake.—p. 600.
Liver Function Studies During Cortisone Therapy. J. H. Holmes and S. C. Percefull.—p. 608.
Clinical Application of Pituitary Adrenocorticotropic and Adrenal Steroid Hormones. L. W. Kinsell.—p. 615.
Functional Interrelationship of Anterior Pituitary and Adrenal Cortex. D. J. Ingle.—p. 652.
Meningo-Encephalitis Due to Brucellosis, with Report of Case in Which B. Abortus was Recovered from Cerebrospinal Fluid, and Review of Literature. E. Nichols.—p. 673.
Miliary Tuberculosis in Cortisone Treated Patient: Case Report with Autopsy. R. F. Kleinschmidt and J. M. Johnston.—p. 694.

Vitamin B_{12} and Castle's Intrinsic Factor.—Vitamin B_{12} is but one of a group of related compounds for which the generic term "cobalamin" has been proposed by its American discoverers. Individual compounds have been isolated from biological materials and have been designated as cyanocobalamin (vitamin B_{12}) and hydroxycobalamin (vitamin B_{12b}). All of the cobalamin compounds that have been tested clinically have the same type and apparently the same degree of hemopoietic activity. The efficacy of liver extracts in the treatment of pernicious anemia appears to depend on the amount of these compounds they contain, and solutions of the compounds given by intramuscular injection are effective substitutes for liver extracts. Dietary deficiency of these compounds may result in severe macrocytic anemia. The condition may be completely corrected by the daily oral administration of 5 γ of crystalline vitamin B_{12} without a source of intrinsic factor. Disturbance of intestinal function with diminished absorptive area and dietary inadequacy may give rise to multiple deficiencies associated with macrocytic anemia and require the parenteral administration of both a vitamin B_{12} compound and folic acid (pteroylglutamic acid) to achieve a satisfactory therapeutic result. Efficient utilization of an orally administered B_{12} compound by patients with pernicious anemia requires an exogenous source of intrinsic factor, although the role of intrinsic factor in this potentiating action is not understood. It does not appear to protect the vitamin against destruction in the alimentary tract nor to prevent its utilization by bacteria inhabiting the stomach and small intestine. There appears to be a correlation between the intrinsic factor activity of gastric and duodenal preparations and their capacity to combine with the vitamin and thereby render it incapable of stimulating the growth of micro-organisms which require it. Four cases are reported: two patients with non-Addisonian macrocytic anemia treated with the vitamin without intrinsic factor and two patients with pernicious anemia, one treated with vitamin B_{12b} and desiccated hog duodenal mucosa and the other with heated trypsin digest of an intrinsic factor-vitamin B_{12} complex.

Coronary Sclerosis and Pulmonary Hypertension.—Evidence of coronary heart disease was observed in persons who also showed strain on the right ventricle from one of the following causes: kyphoscoliosis with pronounced chest deformity, spinal arthritis, thoracoplasty, pulmonary fibrosis, emphysema, and pulmonary vascular disease from mitral stenosis. The age of onset of circulatory symptoms was 47 or over. All the patients had angina pectoris or congestive heart failure or both. Electrocardiographic abnormalities were present in all but one case, but there was no typical electrocardiographic pattern of the combined disorders. Cardiac enlargement was the rule, but the enlargement was pronounced only in the three patients who had associated systemic hypertension. Sinus rhythm was present in all. A considerable degree of cardiac disability existed, but nearly half the patients were able to follow a gainful occupation with intervals of full disability. Respiratory infections were disabling. Pneumonitis in the patients with angina pectoris led to severe prolonged chest pain of the usual type, which did not respond to glyceryl trinitrate (nitroglycerin). One patient survived three attacks of myocardial infarction following pulmonary infections. Oxygen therapy was beneficial in every instance of respiratory infection for which it was given and seemed particularly helpful in angina pectoris. Chemotherapy and antibiotics were used to combat respiratory infection. The effect of digitalis was often disappointing. A low sodium intake and mercurial diuretics were more efficient methods of treatment for congestive failure. After an injection of mercurial diuretic, administration of glyceryl trinitrate can be spaced at intervals of several days in patients with frequent anginal attacks and persistent pulmonary congestion. Theophylline compounds and antihistaminics were used with varying results. A regimen for daily living and avoidance of exposure to respiratory infections were considered basic treatment. Winter residence in a warm climate is recommended. Two cases are reported in detail.

Miliary Tuberculosis in a Cortisone-Treated Patient.—Acute miliary tuberculosis is reported in a man 59 receiving cortisone for a chronic febrile illness with arthritic manifestations. A 30-day course of cortisone, 100 mg. intramuscularly daily, was given with considerable relief of the joint pains, but the temperature continued to be elevated and the erythrocyte sedimentation rate remained rapid. A second 17-day course of cortisone and a third 25-day course were given during the next two months, with approximately the same effect noted initially. The patient died suddenly and unexpectedly on the 112th hospital day. Necropsy revealed arteriosclerotic heart disease, atherosclerosis of coronary arteries with pronounced insufficiency, chronic organizing pneumonia, acute miliary tuberculosis of the lungs, peribronchial lymph nodes, liver, spleen and adrenal glands, and benign arteriolar nephrosclerosis. Although there was no proof, it is likely that cortisone contributed to the development of acute miliary tuberculosis in this patient. The patient undoubtedly died of arteriosclerotic heart disease. The tubercles were so small that they were not evident in repeated roentgenologic examinations of the chest or in the gross specimens at necropsy, which seemed to indicate that they developed some time after the first course of cortisone was started. Their maximal age was estimated at approximately eight weeks. Certain clinical features of the case were suggestive of periarteritis nodosa, and it was on this basis that cortisone was given. The authors' experience seems to indicate that the administration of cortisone to patients with undiagnosed febrile illnesses should be avoided. Cortisone should not be administered to patients with active tuberculosis until further information is available.

Anesthesiology, New York

12:541-672 (Sept.) 1951. **Partial Index**

The Oximeter—Technical Aid for the Anesthesiologist. C. R. Stephen, H. M. Slater, A. L. Johnson and P. Sekelj.—p. 541.
Reflex Circulatory Responses to Direct Laryngoscopy and Tracheal Intubation Performed During General Anesthesia. B. D. King, L. C. Harris Jr., F. E. Greifenstein and others.—p. 556.
Clinical Application of Automatic Anesthesia. D. E. Soltero, A. Faulconer Jr. and R. G. Bickford.—p. 574.
Effect of Sympathomimetic Amines on Duration of Procaine Spinal Anesthesia. M. Helrich, E. M. Papper, B. B. Brodie and others. —p. 595.
Supervised Emergence of the Anesthetized Patient. C. D. Anderson. —p. 604.
Use of Hyaluronidase in Local and Nerve Block Analgesia Other Than Spinal Block: 1520 Cases. D. C. Moore.—p. 611.
*Inhibition of Sweating in Man by Scopolamine. M. J. Frumin and E. M. Papper.—p. 627.
Pain and Some Factors That Modify It. H. K. Beecher.—p. 633.
Experimental and Clinical Evaluation of Sodium Allyl 1-Methylbutyl Barbiturate (Seconal) Administered Intravenously. R. W. Virtue and J. E. Gootee.—p. 642.
Experiences with Ultra-Short Acting Intravenous Barbiturates Combined with Decamethonium Bromide for Endotracheal Intubation. P. P. Volpitto.—p. 648.

Inhibition of Sweating by Scopolamine.—The control of body temperature during general anesthesia is altered considerably. Earlier workers recognized hypothermia associated with the administration of ether by open methods. This was considered an important factor in the precipitation of shock. In more recer years, particularly with the almost routine employment of close circuits with carbon dioxide absorption methods, elevated temperatures have been observed frequently during general ane thesia. To investigate elements that might account for diminish heat loss, the authors studied the effect of the inhibition of th sweating mechanism by scopolamine hydrobromide, which w given to unanesthetized men subjected to the stress of enviro mental temperatures approximately equal to the normal averag skin temperature. This drug, commonly employed in preane thetic medication, is a cholinergic blocking compound a prevents the activation of the sweat glands, which are innervat by cholinergic nerves. Scopolamine was found to depress the ra of sweating in normal man by 35%, which may be a factor hyperthermia during surgical operations, especially if norm sweating is further impaired by illness or dehydration. T authors feel that this and other aspects of temperature regulati under anesthesia is needed. The pharmacologic aspect, althou important, is only one part of the problem. The heat load i posed by drapes, a humid room, proximity of surgeons a lights should be estimated. Consideration should be given to t influence of spinal, peridural, and caudal anesthesia on h loss by virtue of inhibition of sweating.

Archives of Pediatrics, New York

68:357-406 (Aug.) 1951

Poliomyelitis in a Pair of Identical Twins: Report of Cases. R. Haumeder.—p. 357.
*Peptic Ulcer in Childhood: Report of Six Cases. J. B. Gillespie H. E. Bliss.—p. 361.
Treatment of Refractory Asthmatics. A. Sterling, A. Fishman V. Sherman.—p. 373.
Local Therapy in Dermatoses of the Newborn Infant. C. B. Heir H. G. Grayzel and B. Kramer.—p. 382.

Peptic Ulcer in Childhood.—The six children with peptic ul whose cases are reported were observed by Gillespie and B between 1934 and 1951. In each instance the diagnosis suspected clinically and confirmed by roentgenologic exami tion. Five were male and one was female, and the ages ran from 2 to 9 years. Five of the ulcers were duodenal and one gastric. In at least two of the patients the lesions and sympto persisted into young adulthood. An obstructing pyloric ul developed in the 2-year-old patient, which was possibly initia or aggravated by the administration of aureomycin. The ol of the six children, a 9-year-old boy with spastic quadriple sustained a gastric ulcer (Curling's) subsequent to a severe extensive burn. The possible presence of an inflammatory les of the stomach or duodenum should be considered in any c with vague or ulcer-like abdominal complaints.

Archives of Physical Medicine, Chicago

32:567-616 (Sept.) 1951. **Partial Index**

Sex and Age Differences in Mechanical Ability of Physical The Matriculants. F. A. Hellebrandt, S. J. Houtz and T. Pedersen.—p.
Combined Use of Cortisone, ACTH and Rehabilitation Technique Certain Arthritis Problems. J. A. Coss Jr. and C. A. Ragan.—p.
Effect of Neostigmine Studies on Spasticity of Skeletal Muscle in U Motor Neuron Lesions: Preliminary Report. G. G. Hirschberg A. S. Abramson.—p. 575.
Diagnostic Features of Electromyography. O. L. Huddleston, E. Au and A. A. Marinacci.—p. 579.
*Value of Pylon in Pre-Prosthetic Management of Lower Extremity Am tee. L. Blau, J. J. Phillips and D. L. Rose.—p. 585.
Galvanism in Treatment of Ecchymosis. D. Dancik and A. Degr —p. 593.

The Pylon in Preprosthetic Management.—Although the use pylons in preprosthetic training has been criticized in the be that its use will result in an unnatural gait characterized circumduction of the stump, an absence of motion at the k and an abnormal movement pattern in general, these aut believe that pylons have merits that are not fully reali Thirty-one consecutive amputees were fitted with a pylon w awaiting the permanent prosthesis, with no unfavorable co quence. The abduction gait, bulbous, sensitive stump, and p pattern of locomotion emphasized in the literature were encountered. The pylon was acceptable to the patient, and i durable and easily fabricated. Replacement of the pylon bu and lining is cheaper and simpler than similar changes in the permanent prosthesis. Since most of the stump shrinkage occurred while the pylon was worn, its use should not be terminated too soon. Use of the pylon enabled the patient to return to gainful work while awaiting the permanent prosthesis, which is not always possible with the use of crutches alone.

Arkansas Medical Society Journal, Fort Smith

48:113-128 (Oct.) 1951

Optimum Age and Procedure of Choice for Elective Surgery in Infancy and Childhood. L. A. Longino.—p. 113.
Involutional Melancholia and Depressive States: Results of Treatment Over 5-Year Period. L. A. Cohen.—p. 123.
Management of Lesions of Breast. J. H. Growdon.—p. 125.

Bacteriological Reviews, Baltimore

15:105-182 (Sept.) 1951

*Mechanisms of Man's Resistance to Infectious Diseases. W. J. Nungester.—p. 105.
Synthesis of Nucleic Acid by Virus-Infected Bacteria. S. S. Cohen.—p. 131.
Intermediary Metabolism of Mycobacteria. N. L. Edson.—p. 147.

Mechanisms of Resistance to Infectious Diseases.—Man's resistance to infection depends on many factors. Mechanical barriers aid in preventing the entrance of micro-organisms into susceptible tissues and also in localizing infections. These include the epithelial coverings such as the skin, the gastrointestinal tract mucosa, and the epithelium of the respiratory tract. Barriers within the body, such as the tendon sheaths, fascial planes, the blood-brain barrier, and serous membranes, all prevent in a mechanical way the spread of infection from one part of the body to another. Certain physiological processes act in a mechanical manner to prevent infection. These include tear secretion and flow of saliva and urine, or the formation and movement of the mucus sheath of the respiratory tract and of the mucus secretions of the other parts of the viscera. The various body fluids, such as blood plasma and gastric juice, exercise antimicrobial actions against certain parasites. Such actions are frequently associated with the immune state of the host. The phagocytic cells play a most important role in the defense of the body against bacteria, protozoa, and probably viruses. Age, heredity, congenital influences, nutrition, fatigue, temperature, and concurrent disease are general factors that play a part in resistance against disease. Nungester stresses that all possible approaches must be employed in the battle against infections. To attack the problem from only one angle, for example biochemistry, however important it may be, is not adequate. Teamwork is required to contribute significantly to man's success in his battle against infectious diseases.

Blood, New York

6:867-962 (Oct.) 1951

Hematologic Manifestations of Vitamin B_{12} Deficiency in Swine. G. E. Cartwright, B. Tatting, J. Robinson and others.—p. 867.
Quantitative Analysis of Normal and Four Alternative Degrees of Inherited Macrocytic Anemia in House Mouse: I. Number and Size of Erythrocytes. E. S. Russell and E. L. Fondal.—p. 892.
Nucleic Acids of Rabbit Reticulocytes. N. S. Burt, R. G. E. Murray and R. J. Rossiter.—p. 906.
Role of Lungs in Removal of Transfused Lymphocytes. A. S. Weisberger, R. A. Guyton, R. W. Heinle and J. P. Storaasli.—p. 916.
Effect of Intravenous Histamine Administration on Level of White Blood Count in Peripheral Blood. H. R. Bierman, K. H. Kelly, N. L. Petrakis and others.—p. 926.
Paroxysmal Nocturnal Hemoglobinuria: With Two New Case Reports. S. K. McIlvanie and M. F. Beard.—p. 936.
Activity of Megakaryocytes in Postoperative State. A. A. Kerhulas, R. L. Ohler, R. Warren and J. S. Belko.—p. 945.
Surrounding Membrane of Granulations of Neutrophil and Its Acid Alcohol Fastness. P. Seabra.—p. 949.

Bulletin of New York Academy of Medicine, New York

27:597-640 (Oct.) 1951

Structure and Functions of New York Academy of Medicine. H. R. Craig.—p. 597.
Ewing: Experimental Method and Cancer Problem. C. P. Rhoads.—p. 606.
Freud: Man and Scientist. R. M. Loewenstein.—p. 623.

Endocrinology, Springfield, Ill.

49:149-288 (Aug.) 1951. **Partial Index**

Biological Activity of Steroids as Determined by Assay of Renin-Substrate (Hypertensinogen). O. M. Helmer and R. S. Griffith.—p. 154.
Effect of Pituitary Stalk-Section on Reproductive Organs of Female Rats. R. O. Greep and R. J. Barrnett.—p. 172.
Studies on Role of Adrenal in Anaphylaxis and Histamine-Shock. F. J. Saunders.—p. 185.
Action of Human Chorionic Gonadotrophin upon Metabolism of Phosphorus in Thymus of Hypophysectomized Immature Rats. U. Borell and E. Diczfalusy.—p. 189.
Prevention by Somatotrophin of Catabolism Which Normally Occurs During Stress. H. Selye.—p. 197.
Inhibition of Gametokinetic Response in Male "Rana Pipiens" with Adrenolytic Drugs. S. L. Clark, R. B. Greenblatt and R. M. West.—p. 200.
Gonadal Influences on Survival After Adrenalectomy in Golden Hamster. J. G. Snyder and L. C. Wyman.—p. 205.
Systemic Levels of Plasma Progesterone During Pregnancy in Women and Monkeys. T. R. Forbes.—p. 218.
Site of Thyrotrophin and Gonadotrophin Production in Rat Pituitary Studied by McManus-Hotchkiss Staining for Glycoprotein. H. D. Purves and W. E. Griesbach.—p. 244.
Histochemical Demonstration of Ketosteroids in Normal and Neoplastic Testes. R. Ashbel, R. B. Cohen and A. M. Seligman.—p. 265.

Florida Medical Association Journal, Jacksonville

38:151-224 (Sept.) 1951

Endocrine Relationships in Diabetes Mellitus and Carbohydrate Metabolism. S. Davidson.—p. 167.
Survey of Progress in General Field of Health in Florida for Period from 1940 to 1949. W. T. Sowder.—p. 171.
Stevens-Johnson Disease: Report of Case. R. R. Duke.—p. 176.

38:225-304 (Oct.) 1951

*Melanoma and Carcinoid of Rectum. C. Rosser.—p. 247.
Problems of Medical Care in Poliomyelitis. K. S. Landauer.—p. 252.
Antibiotics in Treatment of Urinary Tract Infections. G. Carroll and R. V. Brennan.—p. 257.
Safeguarding the Part Time Florida Patient. A. E. Murphy.—p. 259.
Use of Intra-Arterial Aminophylline for Peripheral Arteriosclerosis. J. A. Rickles.—p. 263.
Consolidated Screening Survey in Seminole County. M. J. Ford.—p. 265.
The Greeks Had a Word For It. G. A. Dame.—p. 268.

Melanoma and Carcinoid of Rectum.—The discussion of melanoma and carcinoid of the rectum is combined for the following reasons: both tumors are believed to arise from embryologic neural cells; both have a characteristic color, black in the case of malignant melanoma and yellow in carcinoid; neither has been understood well enough for general agreement concerning even the nomenclature; and both are surgical problems. Because no early specific or localizing symptoms occur with either tumor, melanomas in a malignant phase or carcinoids that are malignant per se are recognized almost invariably after metastasis, which occurs through the lymph or blood channels and may involve any part of the body. As information concerning these two neoplasms has increased, the terms used to designate them have been discarded or revised constantly. In Bacon's most recent text, for example, the tumor now known generally as melanoma is referred to as melanosarcoma, melanoepithelioma, malignant melanoma, and melanoblastoma. There is general dissatisfaction with Oberndorfer's term "carcinoid" for a tumor which, while benign in the appendix and on occasion in the remainder of the bowel, has violent carcinoma-like potentialities. There is a trend to adopt Masson's alternate designation, "neurocrine tumors," instead of carcinoid. The efficacy of roentgen rays has been disproved in melanoma and is unproved in carcinoid. Radical surgery is justified before metastases have occurred. The author reports two of his own cases.

Journal of Bacteriology, Baltimore

62:253-354 (Sept.) 1951. **Partial Index**

Studies on Specificity of Fermentation of Pentoses by Lactobacillus Pentosus. J. O. Lampen and H. R. Peterjohn.—p. 281.
Studies on Lysogenesis: I. Mode of Phage Liberation by Lysogenic Escherichia Coli. G. Bertani.—p. 293.
Mutual Exclusion Between Infecting Phage and Carried Phage. J. J. Weigle and M. Delbrück.—p. 301.
Arithmetic Linear Growth of Mycobacterium Tuberculosis Var. Hominis. M. W. Fisher, W. F. Kirchheimer and A. R. Hess.—p. 319.
Biochemical Studies on Phenomenon of Virus Reproduction. J. Spizizen, J. C. Kenney and B. Hampil.—p. 323.
Further Mineral Requirements of Streptococcus Faecalis. R. A. MacLeod.—p. 337.

for oral use, all patients were transferred to this preparation, the initial dose varying from three to four tablets a day for several days, followed by a maintenance dose of one tablet (25 mg.) twice, and in some three times daily. The duration of treatment varied from 3 to 14 months. All patients throughout the course of cortisone treatment were placed on a diet having a salt content that did not exceed 1 gm. Physical therapy was used as an adjunct during the two-week period of hospitalization. Of the 63 patients treated, 37 were considered to have obtained good results and 21 fair results; treatment failed in 5 patients. The age of the patient appeared to have some bearing on the end result. The 15 patients in the first three decades of life had the highest percentage of good results (80%). After the third decade the incidence of good results became progressively smaller. The influence of sex on the outcome of cortisone therapy was insignificant. Supplementary treatment with sex hormones, tetraethylammonium chloride (etamon®), vitamin C, and gold, in combination with cortisone, was of little help. Side-effects, such as euphoria, psychosis, hirsutism, moon face, and edema of the extremities, occurred in a small number of patients. In all instances these complications subsided after cortisone treatment was stopped. To obtain the most satisfactory results it is essential for cortisone to be administered continuously and in adequate dosage.

Missouri State Medical Assn. Journal, St. Louis

48:751-844 (Oct.) 1951

CIVIL DEFENSE

Why Civil Defense? C. P. Hungate.—p. 768.
Civil Defense Needs Every Physician. E. F. Stegen.—p. 771.
State Level Civil Defense, Health and Medical Services and Special Weapons Defense. B. G. Hamilton and H. S. Miller.—p. 775.
Role of Red Cross in Civil Defense. M. Tainter.—p. 776.
Plan for Medical Service in Missouri's Civil Defense Program. C. H. Lohr.—p. 779.
Personnel Requirements of Medical Portion of State Civil Defense Plan. D. G. Hall.—p. 800.
Functions of General Staff Section on Plans and Training (D-3). S. J. Merenda.—p. 800.
Function of Intelligence (G-2) Section. W. J. Shaw.—p. 801.
Supply and Logistics. J. Growdon.—p. 802.
Blood Program. H. N. Allen.—p. 805.
Radiologic Warfare Defense. J. E. Schiffmacher.—p. 806.
Biologic Warfare: National Civil Defense Administration.—p. 810.
Public Health Activities in Civil Defense. C. F. Blankenship.—p. 813.
Medical Plans for Civil Defense in Nontarget Area. S. A. Grantham.—p. 817.
Medical Public Information. J. D. Bennett.—p. 818.
Time for Decision. C. P. Hungate.—p. 821.

Nebraska State Medical Journal, Lincoln

36:313-344 (Oct.) 1951

Recognition and Management of Bronchiectasis. R. H. Overholt.—p. 315.
The Physician and the Dentist. A. Dunn.—p. 322.
High Cost of Drugs for Recipients of Old Age Assistance: Report of Maternal and Child Health Committee. R. E. Garlinghouse.—p. 323.
Orthopaedic Care of Compound Fractures. H. F. Johnson and F. D. Sundstrom.—p. 327.
The Physician's Opportunities and Responsibilities in School Health Service. H. M. Jahr.—p. 329.
The Complaint of the Patient. E. E. Houfek and R. H. Young.—p. 331.
Amoebiasis in Nebraska. G. W. Kelly and L. O. Vose.—p. 334.

New England Journal of Medicine, Boston

245:389-440 (Sept. 13) 1951

*Some Questions About Bronchiogenic Carcinoma. E. A. Graham.—p. 389.
Genesis of Coronary Sclerosis. T. Leary.—p. 397.
*Retrolental Fibroplasia: Statistical Study with Particular Reference to Effect of Vitamin A. J. Dancis, J. M. Lewis and L. P. Guy.—p. 402.
Wool As Cause of Eczema in Children. L. W. Hill.—p. 407.
Blood Grouping, Blood Banking and Blood Transfusion (Continued). L. Soutter, F. H. Allen Jr. and C. P. Emerson Jr.—p. 410.

Bronchiogenic Carcinoma.—In recent years an enormous increase has occurred in the incidence of bronchiogenic carcinoma throughout the western world. In the United States the increase in incidence was almost eightfold in the 21 years between 1914 and 1935. Judging from more recent vital statistics available in other countries, one may assume that the incidence since 1935 has increased still further. Although bronchiogenic carcinoma is a disease that affects men oftener than women, the disparity cannot be explained by inherent sex differences. The author's own statistical studies and those carried out by Doll and Hill in Great Britain indicate strongly that cigarette smoking is at least one important factor in the etiology of most cases of bronchiogenic carcinoma. Epidermoid (squamous) carcinoma and adenocarcinoma are the two main types of bronchiogenic carcinoma. Other types have been named, but most of them are probably variants of the two main types mentioned. The epidermoid carcinoma and its undifferentiated variant are the types that have shown the greatest increase in incidence. Also, it is this variety that is most prevalent in men and that is most commonly observed in heavy smokers. On the contrary, the adenocarcinoma has apparently not shown much increase and is about equally divided between the two sexes and has a high relative incidence in nonsmokers. It seems probable, therefore, that the cigarette cancer is the epidermoid variety and that this is essentially different from the adenocarcinoma in pathogenesis. It is suggested that the two main types of bronchiogenic carcinoma arise in response to different carcinogenic agents. One remarkable and so far unexplained peculiarity about bronchiogenic carcinoma is the fact that at necropsy metastases were observed to the adrenal glands in a large percentage of cases. Any satisfactory conclusion on the effectiveness of lobectomy as contrasted with pneumonectomy in obtaining a five-year survival may be formed only when much larger series of comparative results may be available. More use should be made of preoperative tests of respiratory function in order to determine the advisability of total pneumonectomy.

Retrolental Fibroplasia.—The incidence of retrolental fibroplasia among premature infants was investigated at Bellevue Hospital, New York, during the period of November, 1946, to October, 1950. Between November, 1946, and March, 1948, a water-miscible vitamin-D preparation was used routinely in the feeding of premature infants. During this period the incidence of retrolental fibroplasia was extremely low. Beginning in March, 1948, a water-miscible multivitamin preparation containing vitamin A was substituted for the vitamin D. The incidence of retrolental fibroplasia remained unchanged until May, 1949. This persistently low incidence for over a year makes it very unlikely that the vitamin-A preparation is a factor in the production of retrolental fibroplasia. Since May, 1949, the incidence of retrolental fibroplasia has been rising, despite the fact that practices concerning transfusions, supplementary iron, exposure to light, and the initial starvation period remained unchanged. As the incidence rose, the infants with higher birth weights became involved, which was in contrast to previous experience that the incidence of retrolental fibroplasia varies inversely with the birth weight. This suggests that as the agent that produces retrolental fibroplasia becomes more prevalent, it also becomes more potent. For the last eight months vitamin D alone was used again as a substitute for the water-miscible multivitamin preparation containing vitamin A, and the incidence of retrolental fibroplasia appears to be remaining high, although, since a complete six-month follow-up of a sufficient number of infants has not been made, no definite statement is possible.

New York State Journal of Medicine, New York

51:1995-2054 (Sept. 1) (Part I) 1951

Atopic Dermatitis: Some Aspects and Considerations. J. Wolf.—p. 1995.
Application of Simple Minor Surgical Technics to Dermatologic Practice. D. Torre and G. M. Lewis.—p. 2000.
Industrial Dermatoses and Law: Suggestions for Improvement. E. F. Traub and D. Schultheis Jr.—p. 2005.
Ionizing Radiations in Dermatologic Practice. A. C. Cipollaro and A. Brodey.—p. 2011.
*Problem of Consecutive, Complicating Eruptions in Industrial Medicine. G. F. Emerson.—p. 2015.
Cortisone in Treatment of Cutaneous Diseases. M. J. Costello.—p. 2017.
Malignant Melanomas of Skin: F. D. Weidman.—p. 2022.
Nummular Eczema as Clinical Entity. P. Gross.—p. 2025.
Anaplastic Epithelioma Developing in Acrodermatitis Chronica Atrophicans. W. Sachs and A. W. Young.—p. 2028.
Infantile Cortical Hyperostosis. R. I. Jaslow and C. F. Friedman.—p. 2031.

Consecutive, Complicating Eruption and Compensation.—In one of the two cases reported here, a woman was exposed to chemicals used in electroplating, which apparently frequently wet her hands and forearms. After one month at this work, dermatitis appeared on the exposed parts, and later the face and neck became involved. Since that time (1944) she has been under the care of dermatologists and general practitioners for varying intervals of time. The dermatosis has persisted and is worse during the summer heat. This patient and another, who suffered a welding burn in 1949, raise a number of questions concerning workmen's compensation. The author discusses such questions as whether such patients are entitled to free treatment of skin lesions for the rest of their lives and whether the employer in whose plant the original skin lesion was acquired is liable for later doctor, hospital, and medicine bills.

North Carolina Medical Journal, Winston-Salem

12:413-480 (Sept.) 1951

Jaundice. P. Thorek.—p. 413.
Dangers of Obscuring Serious Disease by Early Chemotherapeutic Treatment of Mild Symptoms. G. T. Harrell.—p. 417.
Intra-Uterine Fetal Death. D. C. Schweizer.—p. 421.
The Rh Factor and Erythroblastosis Fetalis. A. R. Cross.—p. 426.
New Intravenous Barbiturate in Obstetrics. M. H. Bertling and J. C. Burwell Jr.—p. 429.
Congenital Anomaly of Uterus as Cause of Abdominal Pregnancy: Case Report. P. E. Simpson.—p. 431.
*Gout in Young People. D. Flinchum and J. A. Powers.—p. 433.
Aureomycin and Its Use in Treatment of Chronic Osteomyelitis. J. L. Goldner and H. A. Gailey.—p. 436.
Has Malaria Disappeared? C. P. Stevick.—p. 438.

Gout in Young Persons.—The average age of onset of gout is 40 years, but in young persons it is frequently overlooked. The attacks may be infrequent, with no symptoms between exacerbations, and the disease may remain dormant and asymptomatic throughout life with hyperuricemia as the only sign. Gout may be present for several years before tophi can be demonstrated. Some patients will, on careful questioning, date their symptoms back to teen age. The three cases reported occurred in a boy 15 and two men of 25. The joints most commonly involved are, in order of frequency, the foot, hand, knee, elbow, shoulder, and hip. Emotional upsets, an operation, alcoholic excess, trauma, undue exercise, or physical exertion may initiate an episode of symptomatic gout. Attacks occur often in spring, and allergic phenomena are frequently noted in gouty persons. During an attack the blood uric acid level is usually over 6 mg. per 100 cc., but it may be within normal limits (2 to 4 mg.). There is no correlation between the uric acid content and clinical severity. Colchicine is specific therapy for gout, and a therapeutic trial with it is often indicated to establish the diagnosis. Salicylates are useful because of their analgesic effect and because they increase the excretion of uric acid. A low purine diet seems helpful. Cortisone or corticotropin (ACTH) usually gives prompt relief. Complete relief is usually obtained after one or two 100 mg. doses of cortisone. Colchicine can then be used to prevent symptoms.

Radiology, Syracuse, N. Y.

57:305-468 (Sept.) 1951

Value of Soft-Tissue Technic in Diagnosis and Treatment of Head and Neck Tumors. G. H. Fletcher and K. E. Matzinger.—p. 305.
Pericardial Celomic Cysts: Presentation of Five New Cases and Five Similar Cases Illustrating Difficulty of Diagnosis. J. C. Bates and F. Y. Leaver.—p. 330.
*Roentgen Diagnosis of Intrathoracic Lymph-Node Metastases in Carcinoma of Lung. J. J. McCort and L. L. Robbins.—p. 339.
Correlation of Postmortem Pathological Observations with Chest Roentgenograms. D. S. Beilin, J. P. Fink and L. W. Leslie.—p. 361.
Roentgen Diagnosis of Pericardial Effusion, with Special Reference to Appearance of Barium-Filled Esophagus and Cardiohepatic Angle. G. Levene and S. A. Kaufman.—p. 373.
Nitrogen Mustard as Adjunct to Radiation in Management of Bronchogenic Cancer. B. Roswit and G. Kaplan.—p. 384.
Cerebellopontine Angle Tumors: Their Roentgenologic Manifestations. P. J. Hodes, E. P. Pendergrass and J. M. Dennis.—p. 395.
Angiographic Demonstration of Anatomic Variation in Position of Transverse Dural Sinuses. B. S. Epstein.—p. 407.
Effect of Roentgen Radiation on Thyroid Function in Rats. J. B. Hursh, P. A. Van Valkenburg and J. B. Mohney.—p. 411.
Lethal Irradiation of Mice with High Doses of Roentgen and Gamma Rays. P. Bonét-Maury and F. Patti.—p. 419.

Roentgen Diagnosis of Lymph Node Metastases in Lung Carcinoma.—McCort and Robbins investigated the records of 221 surgically treated patients with carcinoma of the lung. Enlargement of regional lymph nodes was found during operation in 146, and laboratory examination showed carcinoma in the lymph nodes in 135 of these cases. Complete information on 103 of these patients was obtained. The authors found that carcinoma of the lung spreads mainly by the lymphatic system, and the regional lymph nodes are oftenest involved. Metastases to these nodes diminish the possibility of surgical cure, cause enlargement of these nodes, and often make them visible on roentgenograms. The mechanisms by which this occurs are as follows: 1. The enlarged nodes project into the lung and are visualized by virtue of their contrast with aerated lung. 2. They may alter the normal contours of the mediastinal structures. 3. They may displace the mediastinal structures. It has not been possible to determine a relationship between the segment of the lung involved by the primary tumor and the group of lymph nodes invaded by the metastases; however, when the primary tumor occurs in a given lobe, certain lymph node groups are more frequently involved than others. Recognition of the extent of the intrathoracic metastases will be of value in planning treatment.

Review of Gastroenterology, New York

18:617-692 (Sept.) 1951

Surgical Diseases of Esophagus. R. Nissen.—p. 629.
Studies on Factors Influencing Liver Injury and Repair. I. S. Ravdin and H. M. Vars.—p. 637.
Liver Biopsy. E. M. Rappaport.—p. 642.
Gastrointestinal Hormones. F. Hollander.—p. 651.
Utility of Ileocolostomy (Mikulicz-Type). B. J. Ficarra.—p. 656.
Proctologic Survey of Chronic Disease Hospital. S. D. Weston, I. Skir, N. L. Freund and others.—p. 660.
New Modification of Hemoglobin Technic for Determination of Pepsin in Gastric Juice Adapted for Wide Range of Values. G. B. J. Glass, B. L. Pugh and S. Wolf.—p. 670.

Rhode Island Medical Journal, Providence

34:405-452 (Aug.) 1951

Rehabilitation of the Hemiplegic. G. G. Deaver.—p. 421.
Significance of Gastric Ulcer and Cancer of Stomach. A. W. Allen. —p. 425.
Replacement of Femoral Head by Prosthesis. W. R. MacAusland.—p. 428.
The Palpable Liver: Its Relation to Liver Size and Mortality in Laennec's Cirrhosis. R. V. Lewis.—p. 430.
Surgical Fees. W. P. Davis.—p. 436.

34:453-512 (Sept.) 1951

Poliomyelitis. E. J. West and P. L. Mathieu Jr.—p. 469.
Present Status of Antibiotics and the Future in This Field. J. P. Gray. —p. 474.
Essays on Occupations: Surgery. J. Fallon.—p. 484.

Rocky Mountain Medical Journal, Denver

48:647-728 (Sept.) 1951

Office Gynecology. E. J. De Costa.—p. 670.
Metabolic Craniopathy. P. A. Draper.—p. 675.
One-Stage Resection of Pharyngo-Esophageal Diverticula. G. L. Wright and R. G. Rigby.—p. 679.
Carcinoma of Stomach. D. B. Shaw.—p. 684.

Science, Washington, D. C.

114:227-252 (Aug. 31) 1951. **Partial Index**

Thromboplastic Activity of Hyaluronate. S. K. Abul-Haj, J. Watson, J. F. Rinehart and E. W. Page.—p. 237.
*Subcutaneous Implantation of Cortisone Pellets in Rheumatoid Arthritis. E. Henderson, J. W. Gray, M. Weinberg and E. Z. Merrick.—p. 243.

Implantation of Cortisone Pellets in Rheumatoid Arthritis.—Experience with various steroids administered in the form of pellets implanted subcutaneously shows that excellent utilization is the rule. The effect of cortisone pellets was studied in patients with rheumatoid arthritis. Eight adult patients with typical rheumatoid arthritis of severe grade received subcutaneous implantations of 900 mg. cortisone in 12 pellets of 75 mg. each. In four of the cases no cortisone in any form had been given previously. Four patients had been receiving cortisone by daily intramuscular injection for varying periods of time prior to the implantation. Prompt clinical improvement of moderate degree followed the implantation and was sustained for two to four weeks, whereupon all the patients except one relapsed to their pretreatment condition. In the one patient who did not relapse it seemed probable that the disease had become temporarily quiescent from other causes. It is of interest that the pharmacological actions of cortisone by pellet implantation are of much shorter duration (two to four weeks) in patients with intact adrenal cortices than is the case in Addison's disease (adrenal insufficiency) in which they remain effective for several months.

South Dakota J. Med. & Pharmacy, Sioux Falls

4:229-264 (Sept.) 1951

The Acute Abdomen. P. Thorek.—p. 229.
Helpful Points in Diagnosis and Treatment of Liver Disease. M. H. Stauffer.—p. 236.
Care of the Cardiac Patient Undergoing Surgical Treatment. R. D. Pruitt.—p. 244.

4:265-294 (Oct.) 1951

Hematuria. C. D. Creevy.—p. 265.
Early Diagnosis of Acute Abdomen. R. E. Greenfield.—p. 271.

Surgery, Gynecology and Obstetrics, Chicago

93:385-528 (Oct.) 1951

Acute Radiation Injuries in Man. L. H. Hempelmann.—p. 385.
Management of Vesicovaginal Fistula Following Abdominal Total Hysterectomy. H. C. Falk and I. A. Bunkin.—p. 404.
*Blood Transfusions. T. R. Talbot Jr.—p. 411.
*Radioactive Iodine as Adjunct to Surgical Management of Diseases of Thyroid. B. M. Dobyns.—p. 415.
Ten Year Surgical Results of Rectal Cancer. G. E. Binkley and M. W. Stearns Jr.—p. 428.
Partial or Complete Pelvic Exenteration for Extensive Irradiation Necrosis of Pelvic Viscera in the Female. A. Brunschwig.—p. 431.
Facet Synovial Impingement: New Concept in Etiology of Lumbar Vertebral Derangement. G. L. Kraft and D. H. Levinthal.—p. 439.
Balance of Life and Death in Cerebral Lesions. G. Jefferson.—p. 444.
Pregnancy Following Conservative Operation for Endometriosis. R. L. Haas.—p. 459.
Wound Healing: Technical Factors in Gain of Strength in Sutured Abdominal Wall Wounds in Rabbits. C. A. Nelson and C. Dennis.—p. 461.
Studies on Autonomic Blockade: V. Inhibition of Water Diuresis by High Spinal Anesthesia in the Pregnant Woman. N. S. Assali and J. G. Rosenkrantz.—p. 468.
Effect of Long and Short Afferent Loops in Gastrectomy upon Rate of Emptying of Gall Bladder in Experimental Animals. I. D. Baronofsky and D. Gaviser.—p. 479.
Carcinoid (Neurocrine) Tumors of Rectum. C. Rosser.—p. 486.
Use of Subclavian Artery in Surgical Treatment of Coarctation of Aorta. H. B. Shumacker Jr.—p. 491.

Blood Transfusions.—The ease with which clinicians can order and procure stored blood for transfusions has created a situation in which more transfusions are being given than is either wise or necessary. Many serious hazards make blood transfusion both potentially and actually a dangerous undertaking. In addition to the difficulties created by the Rh factor, a number of other hazards or disadvantages make it mandatory for the clinician to weigh the advantages of transfusions against the dangers or inadvisability of giving blood. These hazards are (1) depression of erythropoiesis, (2) homologous serum jaundice, (3) artificial polycythemia, (4) hemolytic transfusion reactions, and (5) pyrogenic transfusion reactions. The clinician should recognize these risks.

Radioactive Iodine in Diseases of Thyroid.—Much fundamental knowledge of the normal and pathological physiology of the thyroid has been acquired by the use of radioactive iodine in laboratory and clinical investigation. Radioactive iodine is useful in making a diagnosis of thyrotoxicosis. The functional capacity of thyroid nodules may be determined preoperatively, giving a clue to the possibility of encountering malignant disease or aiding in identification of hyperfunctioning nodule that may not yet be causing thyrotoxicosis. The preparation of radioautographs from thyroid nodules that have been removed affords an opportunity to correlate their functional capacity with their gross and microscopic appearance. These methods furnish a means for distinguishing between Graves' disease with an incidental nodule and thyrotoxicosis with a hyperfunctioning nodule. Severe thyrotoxicosis in patients who are poor surgical risks may be corrected by administration of radioactive iodine. Although radical surgery remains the primary method of treatment of carcinoma of the thyroid, radioactive iodine is of value in a few patients. Most success has been achieved in patients with the follicular type of adenocarcinoma. Complete removal of all normal thyroid tissue and the administration of thiouracil compounds may augment the uptake of radioactive iodine in some metastases from carcinomas of the thyroid.

Urologic & Cutaneous Review, West Palm Beach, Fla.

55:517-582 (Sept.) 1951

*Aortography and Renal Arteriography Following Percutaneous Retrograde Catheterization of Femoral Artery and Aorta. B. S. Abeshouse, I. Scherlis, M. Golden and M. Rubin.—p. 517.
Bilateral Renal Metastases from Carcinoma of Prostate: Case Report. E. J. Adlerman.—p. 528.
Rhabdomyosarcoma of Urinary Bladder in Children. J. Swinney.—p. 530.
Multiple Congenital Anomalies of Genito-Urinary Tract in Young Boy. P. G. Curbelo and J. Davila.—p. 532.
Lipid Redistribution in Human Spermatogenesis. R. L. Brown.—p. 534.
Selective, Chemical Epilation in Treatment of Tinea Capitis as Contrasted with Diffuse X-Ray Epilation. T. Benedek.—p. 539.
New Studies Experimental and Clinical on Pemphigus. D. I. Macht. —p. 550.
Modern Treatment of Vascular Nevi. J. M. Greenhouse.—p. 559.

Percutaneous Retrograde Aortography.—Arteriography of the aorta and its branches by means of percutaneous catheterization of the unexposed femoral artery with polyethylene catheters, using iodopyracet concentrated solution (70% diodrast®) o 80% sodium iodide as contrast medium, was performed 1 times on 13 patients. The chief value of aortography is that i provides new or additional information of the anatomic, pathological, and physiological aspects of renal disease not obtainabl by any other diagnostic measure or even by surgical intervention. By correlating this information with the radiographic an physiological data obtained by retrograde pyelography and intravenous urography, the urologist can obtain a more accurat and precise picture of the renal disease in certain selected cases Percutaneous retrograde arteriography should not be employe as a routine diagnostic procedure nor as a substitute for retrograde pyelography and intravenous urography. In the author cases diagnosis of renal neoplasm, aneurysm of the left rena artery, extensive suppurative process in the upper and middl portion of the kidney, large saccular aneurysm of the abdomina aorta, and arteriosclerosis of the renal arteries was establishe by percutaneous retrograde arteriography. Tortuosity of th arteries is usually pathognomonic of arteriosclerosis. The calibe of the arteries may be larger than normal in the presence of vascular occlusion, a solid neoplasm, or an acute inflammatory disease of the involved organ. A decrease in the caliber of th arteries is associated with sclerosis or calcification of the vess walls or fibrosis and atrophy of the involved organ. The vascularity of a tumor considerably influences the arteriogram, as i readily seen in the case of renal or adrenal tumors. Compare with translumbar aortography and retrograde aortography b catheterization of the exposed femoral artery, percutaneou retrograde aortography has the distinct advantages of bein a simple and safe procedure, easy to perform and attended b fewer complications and hazards.

West Virginia Medical Journal, Charleston

47:319-346 (Oct.) 1951

The Problems Facing American Medicine in the Immediate Future. W. Cline.—p. 319.
Cysts of Peripheral Retina in Relationship to Detachments. H. Katzin.—p. 325.
Ectromelia: Case Presentation. J. C. Arnett.—p. 328.
Rheumatic Fever. S. M. Jacobson.—p. 331.

Yale Journal of Biology and Medicine, New Haven

24:1-82 (Sept.) 1951

"Unitarian" View of Vaccinia Hemagglutinin. B. A. Briody.—p. 1.
Favism in Childhood: Case Report. D. E. Pickering and S. Hurwi —p. 5.
Studies on Metabolism of Human Cardiac Muscle Obtained by Auricul Appendectomy: Preliminary Report. W. J. Burdette.—p. 9.
Mortality Due to Rheumatic Heart Disease in Socio-Economic Districts New Haven, Connecticut. R. W. Quinn and J. P. Quinn.—p. 15.
Daily Variations of Standing Potential Differences in Human Subject Preliminary Report. L. J. Ravitz.—p. 22.
Pheochromocytoma. D. B. Arst, W. J. Lahey and P. Kunkel.—p. 26.
Acetylcholine and Central Nervous System: Review of Neurochemic Mechanisms. R. A. Hughes and F. Robinson.—p. 35.
Interrelationships of Foodstuffs in Metabolism: Tentative Proposal. J. Peters.—p. 48.

FOREIGN

Arquivos Brasileiros de Cardiología, São Paulo

4:249-362 (Sept.) 1951. **Partial Index**

*Roentgen Diagnosis of Coronary Calcification: Clinical Importance. N. Botelho Reis and E. Amorim.—p. 293.

Roentgen Diagnosis of Coronary Calcification.—Botelho Reis and Amorim describe roentgenologic methods for the diagnosis of calcification of the coronary arteries and the differential diagnosis of coronary calcification and the various types of cardiac and extracardiac calcification. The main roentgen features of coronary calcification are two parallel linear shadows or rosary shaped, nodular and annular shadows of the coronaries. The typical radioscopic shadows are passive and ellipsoid. They are restricted to the coronary region and are transmitted by the pulsations of the heart. The authors report four cases of calcification of coronary arteries in three men between the ages of 53 and 68 and in a woman 68. Both the right and the left coronary arteries were calcified in two patients. The calcification was observed during routine radioscopy with luminous screens. Three patients had had myocardial infarction that was confirmed by electrocardiograms. The infarction was calcified in one patient. The fourth patient had atypical anginal pain. The electrocardiogram did not show a typical myocardial infarct. In this case the radioscopic diagnosis of coronary calcification included that of the myocardial lesion. The authors emphasize the importance of radioscopy followed by roentgen examination of the heart and tomography in patients over 50 years of age with a history of coronary insufficiency for the roentgen diagnosis of coronary calcification. In these patients the roentgen demonstration of coronary calcification constitutes direct proof of coronary arteriosclerosis, with or without myocardial infarct.

British Medical Journal, London

2:689-746 (Sept. 22) 1951

Leptospirosis in England and Wales. J. C. Broom.—p. 689.

*Further Experiences with Prolonged Treatment of Rheumatoid Arthritis with A.C.T.H. and with Gold. J. Goslings, W. Hijmans, A. Querido and A. A. H. Kassenaar.—p. 698.

*B.C.G. Vaccination in the Newborn: Preliminary Report. W. Gaisford and M. Griffiths.—p. 702.

Pethidine as Adjuvant to Nitrous Oxide and Oxygen Anaesthesia. P. D. Johnson.—p. 705.

Post-Mortem Examinations on Air-Crash Victims. D. Teare.—p. 707.

Prozone Phenomenon in Haemagglutination Reactions with Special Reference to Quantitative Antiglobulin Test. P. O. Hubinont.—p. 708.

Injection Treatment of Hydroceles and Spermatoceles. J. A. Rhind. —p. 711.

Acute Subdural Haematoma in Infancy and Childhood. W. Fine and R. N. Herson.—p. 714.

Case of Hypersensitivity to Pethidine in a Woman in Labour. E. B. Butler.—p. 715.

Herpes Zoster with Involvement of Anterior Horn Cells. J. H. McIntyre. —p. 716.

Prolonged Use of Corticotropin in Rheumatoid Arthritis.—Of 20 patients with rheumatoid arthritis treated with corticotropin (ACTH) for one and one-half to eight months, 11 obtained a complete remission, 6 pronounced improvement, and 3 minor improvement. The total dose ranged from 1,150 to 6,570 mg. Follow-up for 1 to 14 months after discontinuation of the drug showed that relapses had occurred. Complete remission was maintained in only one patient, five continued to show pronounced improvement, four showed minor improvement, seven were no longer improved, and three had become worse. No correlation was observed between the severity of the disease and the results of treatment nor between the maintenance of improvement and the total amount of corticotropin administered. According to a previous report by the authors, the minimal effective amount of the drug in four patients was six doses of 2 mg. daily. In the 20 patients reported on, an initially adequate response failed both with low dosage and, in some patients, with continued high dosage, usually after four to eight weeks of treatment. Attempts to explain these failures were unsuccessful. The following possibilities were excluded by special study: masked corticogenic hypothyroidism, diminished response of the peripheral target organs to the cortisone-like substances produced by the adrenals under the influence of exogenous corticotropin, vitamin C deficiency, and decreased activity of the pituitary hormone preparations. Investigations of the possible development of neutralizing antibodies or a shift in the hormone production of the adrenals are indicated. Treatment of rheumatoid arthritis with corticotropin is still worthy of research. In a few cases the improvement obtained with corticotropin could be maintained by concomitant chrysotherapy.

BCG Vaccination in Newborn Infants.—This is a preliminary report on the results of BCG vaccination of 1,461 newborn infants during the first week of life. All vaccinations were made intradermally. A freeze-dried preparation made at the Pasteur Institute in Paris proved valuable, since its strength could be altered by varying the volume of water in which it is dissolved without increasing the total amount injected. The maximum dose of this preparation given was 0.375 mg. in 0.2 ml., the standard strength recommended being 0.1 mg. in 0.1 ml.; but the authors now recommend 0.2 mg. in 0.1 ml. as the routine dose. Of the 1,461 newborn infants vaccinated to date, 1,015 have completed their course and undergone Mantoux conversion. The shortest conversion time was 16 days. All those tested had undergone conversion within 10 weeks. Reactions to the vaccine were observed at the site of injection or in the lymph nodes draining the area of injection. No specific systemic reactions of any kind were observed. Enlarged lymph nodes, 1 to 5 mm. in diameter, were observed in the axilla in about half of the infants inoculated in the arm, and a similar enlargement was present in the inguinal lymph nodes of almost all of the infants inoculated in the thigh. Fluctuations or actual breaking down of a lymph node was seen 50 times, 47 times in the inguinal region and 3 times in the axilla. All these infants had received 0.2 ml. at a single site. This complication occurred so frequently that thigh injections were abandoned. When the standard dose of 0.1 ml. was injected only into the arms, no further complications occurred. It is both possible and practicable to immunize newborn infants with BCG. They react to 0.1 ml. of vaccine as do older children and adults. For routine immunization larger doses are unnecessary and are apt to produce complications. The time required for allergy to develop may be appreciably diminished by increasing the dose used. Although complications are not generally harmful, they are nevertheless undesirable, and the effort to secure a minimal conversion time should be restricted to selected infants for whose special circumstances the time factor is of great importance. In such circumstances complications may be prevented or minimized by giving the injections in divided doses at different sites.

Bruxelles-Médical, Brussels

31:1865-1904 (Sept. 9) 1951

*Some Remarks Concerning Etiology, Diagnosis, Prognosis, and Treatment of Primary Tuberculous Infection in Infants. V. Chevalier. —p. 1865.

Primary Tuberculous Infection in Infants.—This is a study on 65 children aged less than 2 years with primary tuberculous infection, usually with involvement of pulmonary lymph nodes. In contrast to observations made by other authors, the incidence of tuberculosis in the father of the infant was found to be much higher than that in the mother, except in the eight infants aged less than 6 months. Persons other than the infant's parents were the source of contamination in 12 infants, while it remained unknown in the rest of the author's patients. Infants should be separated as early as possible from their tuberculous parents. Although as a rule the prognosis of primary tuberculous infection in infants cannot be definitely stated, it has improved since the discovery of the effective antibiotics, provided that there are no meningitic complications. Early diagnosis is of the utmost importance and may be established only by a subcutaneous tuberculin test or by Vollmer's test. These should be performed routinely in sick infants. After the diagnosis has been made, the infant should receive early and prolonged, simple hygienic and dietetic treatment, for which there is no effective substitute. The infant should also be closely observed, so that complications and acute episodes may be detected in time to institute adequate treatment. Of the 65 infants only 1, aged 20 months, died; this baby had been returned to his family on their request against medical advice, and death resulted from tuberculous meningitis four months after his discharge. Of the 61 infants treated at a sanatorium, only 13 received streptomycin therapy and only 4 of these were aged less than 6 months. As a rule, the total dose administered in one course of streptomycin therapy was 15 gm. and a second consolidation course was given after an interval of several weeks.

Canadian Medical Association Journal, Montreal

65:181-294 (Sept.) 1951

Treatment of Angina Pectoris. J. H. Palmer.—p. 207.
The General Practitioner and His County Health Unit. L. W. C. Sturgeon.—p. 216.
*Plasma Glutamic Acid Levels in Malignancy. J. R. Beaton, W. J. McGanity and E. W. McHenry.—p. 219.
Obstetrical Problems in General Practice. L. T. Armstrong.—p. 221.
Management of Acute Head Injuries. C. Bertrand.—p. 225.
Bilateral Prefrontal Leucotomy in Mental Illness. J. H. Lindsay.—p. 229.
Study of Prevalence of Diabetes in Ontario Community. A. J. Kenny, A. L. Chute and C. H. Best.—p. 233.
Pernicious Anaemia: I. Maintenance Treatment with Liver Extract. D. G. *Cameron, S. R. Townsend and E. S. Mills.—p. 241.*
Manifestations of Sarcoidosis. O. D. Beresford.—p. 245.
Laryngeal Paralysis with Review of Its Treatment. G. E. Hodge and A. Grossman.—p. 251.

Plasma Glutamic Acid Levels in Malignant Disease.—Glutamic acid, found in abundance in many proteins, is believed to func*tion via transamination in the interconversion of carbohydrates,* fats, and proteins. It has been of interest in connection with malignant disease since Kögl and Erxleben in 1939 first suggested the existence of the unnatural D (=) isomer in cancer tissues. Further, Braunstein and associates demonstrated that transaminase activity is impaired in cancer tissues, and Ballantyne and McHenry reported lowered total concentrations of vitamin B_6, believed to be the coenzyme of transaminase, in malignant tumors. It seemed advisable, therefore, to investigate the plasma concentration of plasma glutamic acid in humans with malignancy. The concentration of this metabolite in normal human subjects had been investigated previously. The general procedure used in the study of normal subjects was followed in 80 patients with malignant growths of the cervix, breast, testes, lung, liver, tongue, cheek, stomach, lip, throat, nose, ovary, and ear. No significant correlation could be found between the type or location of the malignant lesion and the level of plasma glutamic acid for the subject. However, the mean plasma concentration of glutamic acid for the total group with malignant disease was markedly elevated above the normal mean, with only a small overlapping of ranges for normal and malignant groups. The mean plasma glutamic acid concentration in humans with benign growths is not significantly altered from normal. It is suggested that the determination of plasma glutamic acid in subjects with undisclosed types of growths may prove to be a means of distinguishing between benign and malignant growths prior to operation.

Deutsche medizinische Wochenschrift, Stuttgart

76:1165-1196 (Sept. 21) 1951. **Partial Index**

Bronchial Asthma. K. Hansen.—p. 1165.
Excretion of Amino Acids in the Urine Induced by Arsphenamine. G. W. Korting and D. Nitz-Litzow.—p. 1169.
*Experimental Asthma in Man. H. Herxheimer.—p. 1171.

Experimental Asthma in Man.—Mild or moderately severe experimental attacks of asthma were induced and terminated artificially in man in the following manner. A spirometer with a drum for continuous recording of air movements is connected *to an oxygen cylinder* and a *flowmeter* that permits oxygen to flow in continuously at the same rate as the oxygen in the spirometer is used up. A side circuit is attached to the inspiratory tube of the spirometer. It leads into an air pump and from there into several glass nebulizers filled with different inhalants that can be used singly and *in quick* succession. From here the air passes back into the inspiratory tube of the main circuit. If the pinchclip that closes a nebulizer is opened and the pump is switched on, aerosol is emitted into the inspiratory tube and inhaled by the subject. By this method the study of the direct action of asthmagenic substances on the bronchi becomes possible. Depending on the inhaled amount of allergen-aerosol (mixed pollen of various plants, fungi, house dust, and cat and horse hair) typical attacks of bronchial asthma occurred in the subjects. The bronchial reaction is much more reliable for diagnosis and treatment of asthma *than the* cutaneous reaction. This method reveals whether a certain allergic substance may induce an attack in an asthmatic patient. The attacks of asthma *induced by histamine, acetylcholine,* and various allergens showed great differences. Massive doses of allergic substances caused hypersensitization, while small doses caused hyposensitization. Bronchial hyposensitization was carried out systematically by gradually increasing the inhaled amount of allergen under continuous control of the bronchial reaction. This method is superior to hyposensitization carried out by injections. The aerosol method may also be used for the study of the mechanics of attacks of asthma and for the prophylactic and therapeutic effects of antiasthmatic substances such as epinephrine, isopropylarterenol hydrochloride, and antihistaminics.

Edinburgh Medical Journal

58:413-456 (Sept.) 1951

Tuberculous Meningitis: Problems in Pathogenesis and Treatment. N. W. Horne.—p. 413.
Case Reports on Glandular Fever. D. B. Peterkin.—p. 430.
Injuries of Female Bladder and Urethra. C. S. Russell.—p. 437.

Irish Journal of Medical Science, Dublin

308:345-392 (Aug.) 1951

Importance of Noradrenaline. J. H. Burn.—p. 345.
Some Clinical and Theoretical Problems of Epilepsy. G. Bennet.—p. 351.
Dietary Factors in Dentistry. W. J. E. Jessop.—p. 366.
Construction of Artificial Vagina. A. B. Clery and E. Solomons.—p. 373.
*Spontaneous Haematomyelia. P. B. B. Gatenby.—p. 377.
Miliary Tuberculosis Complicating Abdominal Pregnancy. A. P. Barry and T. Hanratty.—p. 381.
Implantation of B. Coli into Human Intestine. H. W. Dalton.—p. 384.
Primary Tuberculous Complex in Conjunctiva. P. J. McNicholas.—p. 386.
Temporal Arteritis Complicating Migraine. R. M. Peet.—p. 387.

Spontaneous Hematomyelia.—A boy, 16, experienced a sudden *pain in his chest while carrying golf clubs. He felt warm,* was unable to walk, and had to be carried. Numbness gradually passed upward. Examination revealed a complete flaccid paraplegia, distended bladder, and a sensory level at the fourth thoracic segment, below which there was loss of sensation to pinprick. A more detailed neurologic examination the next day revealed dissociated anesthesia on the left half of the body below the sensory level. Touch, postural sense, and vibration sense were preserved, with loss of pain and temperature sense. On the right half of the body all forms of sensation were lost. Serologic tests and blood cell counts had been made, and roentgenoscopy of the spine showed no abnormality. Diagnosis of hematomyelia was made, based on the sudden onset of an incomplete cord lesion unaccompanied by constitutional disturbances. The patient died about eight months after the onset of the paraplegia. At necropsy, the spinal cord appeared normal externally, except *for slight narrowings in the midthoracic region.* Sections were made at many different levels of the cord. Transverse sections at the fourth and fifth thoracic segments showed such disorganization of the cord that the normal anatomy could not be identified. The sensory changes pointed to the destruction of both spinothalamic tracts and the right posterior column, the left posterior column remaining intact. Histologically there was degeneration in both lateral white columns and in both posterior columns; the left posterior column *escaped to a greater* extent. Taking into account the typical clinical picture and the postmortem finding of numerous large vessels at the level of the lesion, the diagnosis of hematomyelia seems certain, although after eight months there was no longer any evidence of hemorrhage. The mode of death suggested the onset of a further hemorrhage extending upwards in the cord and finally paralyzing respiration. Recently a case of cervical hematomyelia was reported in which the patient was treated successfully by surgical aspiration of blood from the cord. The author feels that the rarity of hemorrhage into the cord is curious, when one considers the frequency of hemorrhage into the brain. Hypertension and arteriosclerosis apparently are not important factors in hematomyelia as they are in cerebral hemorrhage.

Journal of Clinical Pathology, London

4:253-392 (Aug.) 1951. **Partial Index**

*Auto-Antibodies in Acquired Haemolytic Anaemia. J. V. Dacie and G. C. de Gruchy.—p. 253.
*Bleeding Time in Normal and Abnormal Subjects. J. R. O'Brien.—p. 272.
Hyperhaemolysis During Premenstrual Period (Preliminary Report). R. Berlin.—p. 286.
Lupus Erythematosus Cell Inclusion Phenomenon. S. Holman.—p. 290.
Factors Affecting Speed of Agglutination in Coombs Test. I. D. P. Wootton.—p. 296.
Effects of Cortisone on Experimental Glomerulonephritis. G. Teilum, H. C. Engbaek, N. Harboe and M. Simonsen.—p. 301.
Paradoxical Embolism. B. I. Johnson.—p. 316.
Incidence of Penicillin-Resistant Staphylococci in Semi-Closed Community. B. A. Thompson and H. Schwabacher.—p. 350.
Aureomycin Sensitivity of 100 Pathogenic Strains of Staphylococcus Aureus. K. Anderson.—p. 355.

Autoantibodies in Acquired Hemolytic Anemia.—According to Dacie and de Gruchy, cases of hemolytic anemia of spontaneous or endogenous origin may be divided into two broad groups: those determined by a genetic cause resulting in the production of defective red blood cells and those not so determined. Among the latter group of acquired hemolytic anemias are cases in which there is evidence for the presence of antibodies active against the patient's own red blood cells. A series of patients with acquired hemolytic anemia was investigated, with particular reference to the presence in their serums of abnormal antibodies active against red blood cells. Abnormal nonspecific antibodies were demonstrated in 19 patients with idiopathic acquired hemolytic anemia, hemolytic anemia following virus pneumonia, or chronic hemolytic anemia with hemoglobinuria and Raynaud's phenomenon. Trypsinized normal red cells and red cells from patients with paroxysmal nocturnal hemoglobinuria were found to be valuable reagents for the detection of hemolytic antibodies; by their use nonspecific hemolysins of the "warm" or "cold" variety were demonstrated in the serums of 13 of the 19 patients. The variations observed in the antibody patterns in the patients' serums are emphasized, the differences being thought to be reflections of individual responses to the stimuli causing the formation of autoantibodies. Hemolytic antibodies are believed to play a part in the production of hemolysis in vivo, but other types of antibody are probably important in this respect, and the spleen certainly contributes to the hemolytic process in many cases. In three patients of the present series in whom splenectomy was carried out, a pronounced immediate clinical improvement was not accompanied by significant reductions in antibody titer. In these patients, therefore, the spleen seems to have been acting by removing altered or damaged red blood cells, rather than by being an important source of antibody.

Bleeding Time in Normal and Abnormal Subjects.—The bleeding time is the time between the infliction of a small simple cut in the skin and the moment when bleeding stops. It would appear that if a subject bleeds excessively from a small cut, he is likely to bled excessively at operation and conversely that if a subject bleeds normally from one cut he might be expected to bleed normally from another. But in neither case does the corollary always follow. Occasional failures have led to considerable caution in the interpretation of a bleeding time. A further reason for a critical attitude are the comparatively wide and varying limits of normal for this test given in the standard textbooks. Three estimations of the Ivy bleeding time were made on 98 apparently healthy volunteers on two separate occasions. The individual times varied from 0 to more than 15 minutes, while the majority of the recorded times were between 3 to 6 minutes. Two further series by the Duke method (67 subjects) and the ear-saline method (60 subjects) confirmed these results, with only minor differences. A study was made of the results from all the patients with hemorrhagic manifestations referred to the Pathological Department of the Radcliffe Infirmary, Oxford, during the last two years. These results were divided into those from patients with over 100,000 platelets per milliliter of blood and those with gross thrombopenia. The bleeding times of the patients with over 100,000 platelets per milliliter were indistinguishable from those of the normal controls; the majority of the patients with gross thrombopenia had long bleeding times. It is concluded that, except in a few rare diseases, the bleeding time gives no more information than a platelet count. Although the error of any method of counting the platelets is large, the critical level of about 100,000 per milliliter is so far below the normal level—roughly 300,000 by the method used—that confusion is not likely to arise from the inaccuracies of this test. If the platelet count is normal, then it can safely be assumed that the bleeding time also will be "normal"; that is to say, it will fall probably between 2 and 6 minutes, but it may be longer. The only exceptions occur in cases of the rare capillary abnormalities like atrombopenic purpura, the Ehlers-Danlos syndrome, and congenital telangiectasia, in which the platelets are present in normal numbers but the bleeding time may be grossly prolonged if the abnormal capillaries are punctured. As a rule, patients with these syndromes give a characteristic history.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

95:2525-2592 (Sept. 1) 1951. **Partial Index**

Differential Diagnosis of Variola and Varicella. P. B. van Steenis.—p. 2526.
*Cerebellar Apoplexy. W. A. den Hartog Jager.—p. 2533.
Traumatic Intracerebral Frontal Hematoma. G. J. van Hoytema.—p. 2538.
*Unusual Etiology of Anal and Vulvar Pruritus. F. V. B. Dumoulin.—p. 2543.

Cerebellar Apoplexy.—Cerebellar apoplexy is defined by den Hartog Jager as an apparently spontaneous, massive bleeding into the cerebellum. It is only apparently spontaneous, since arteriosclerotic changes of the vessels or hypertension may be causal factors. The clinical picture is not widely known. Eight cases of cerebellar apoplexy were observed at the Neurologic Clinic in Amsterdam from 1935 to 1950. Two of these eight patients were operated on and recovered; four patients died, and two recovered spontaneously. All except the two cases of spontaneous recovery are reviewed. Cerebellar apoplexy may be found in an acute and in a chronic form, both of which are described, with three case reports illustrating each. When cerebellar apoplexy takes a chronic course, symptoms suggesting cerebellar tumor develop. A neurosurgical intervention may prevent a fatal outcome in these cases.

Unusual Etiology of Anal and Vulvar Pruritus.—Dumoulin reports the case of a woman who had paronychia of the right thumb and a pruriginous lesion in the anal and vulvar regions. Since the usual causes of anal and vulvar pruritus (sugar in urine, oxyuriasis, hemorrhoids, fissures, and trichomoniasis) could be ruled out, the combination of paronychia with perianal and vulvar intertriginous dermatitis was diagnosed as a monilial infection. The detection of Candida albicans corroborated this diagnosis. Antimycotic and antipruriginous treatment and the administration of vitamin B complex finally resulted in cure. Reports in the literature suggest that treatment with antibiotics, particularly the oral administration of aureomycin, may produce mucosal changes, especially in the anal and vulvar regions. Questioning of the patient whose case is reported revealed that the pruritus began when she received aureomycin during the treatment of maxillary sinusitis.

Rev. Brasil. Gastroenterologia, Rio de Janeiro

3:395-470 (July-Aug.) 1951. **Partial Index**

Cancer Metastases in Cirrhotic Liver. E. T. Torres.—p. 421.

Cancer Metastases to Cirrhotic Liver.—The occurrence of cancer metastases to cirrhotic liver is rare. The literature contains 13 cases. Torres reviewed 6,356 necropsies that were compiled in 10 years in a department of pathologic anatomy. There were 300 cases of cancer metastases to the liver, only 2 of which were in cirrhotic livers. The metastatic cells were located in the newly formed periportal connective tissue and only occasionally in the lobes of the liver. The rare development of cancer metastases in cirrhotic livers is due to the fact that circulation of a cirrhotic liver is poor and fibroblastic proliferation is an obstacle to the growing of cancer cells. Patients with cirrhosis of liver, when relatively young, do not reach the age of cancer, whereas patients with cancer of the liver do not live long enough to reach the period of the production of cancer metastases.

Revista de Urología, Mexico

9:47-106 (March-April) 1951. **Partial Index**

Statistical Review and Analysis of Results of Transurethral Resection in Cases of Cord Bladder. J. L. Emmett, D. D. Albers and J. de J. Alvarez Ierena.—p. 55.

*Treatment of Prostatic Cancer with Fulminating Pulmonary Metastases. A. C. Drummond.—p. 88.

Treatment of Prostatic Cancer with Fulminating Pulmonary Metastases.—The author performed a transurethral resection of the prostate on a patient, aged 53, for removal of carcinoma. On the 11th day, the patient complained of a pain in the right side of the thorax. Examination showed pallor, slight cyanosis, and shortness of breath. X-ray examination revealed multiple bilateral pulmonary metastases. The patient was given 300 mg. of diethylstilbestrol by injection in 24 hours. Thereafter he was given 150 mg. by injection and 150 mg. orally every 24 hours. His condition improved, and on the 20th day after the operation he was discharged. The dose of diethylstilbestrol was then reduced to 150 mg. a day orally, which was well tolerated and was continued for a year and a half, when x-ray examination showed the lungs to be free from metastases. The patient has regained the weight lost and is now back at work, being maintained with the same daily dose. The efficacy of this treatment was indicated by a decline in the levels of acid phosphatase and alkaline phosphatase. The author believes the case to be no more than arrested. He states that large doses of the estrogen are better tolerated than small ones, and that at least 100 mg. should be given daily, orally or by injection. The drug is tolerated better when it is given shortly before or shortly after meals. The treatment schedule advocated for patients with prostatic cancer and metastatic pain is as follows: (1) 500-1,000 mg. of diethylstilbestrol in divided doses during the first 24 to 36 hours, orally or by injection; (2) 100-300 mg., depending on the severity of the pain, in divided doses daily for five days; (3) 50-100 mg. in divided doses daily, until pain has been relieved and the levels of acid phosphatase and alkaline phosphatase have fallen; and (4) 50-25 mg. indefinitely. Orchidectomy is reserved until the final stage, when it may be performed for relief of pain if needed.

orma Medica, Naples

65:737-764 (July 7) 1951

Clinical and Diagnostic Methods in Mediterranean Fever. L. Guiffrè. —p. 737.

Mediterranean Cutaneous Leishmaniasis in Adults. G. Calì.—p. 738.

*Intraperitoneal Use of Curare: Experimental Study. B. Piccoli and A. Ruggiero.—p. 743.

*"Streptomycin-Excitability": Clinical Report of Six Cases. E. Grimaldi. —p. 746.

Intraperitoneal Administration of Curare.—Intraperitoneal administration of curare was tested in eight medium-sized rabbits of approximately the same weight. The drug was administered with the aid of a catheter inserted in a small abdominal incision. The wound was then sutured to permit better evaluation of the action of the drug. Sensitivity to curare varied in each animal. A quantity that was beneficial for some was fatal for others. A dose of 1 or 1.5 mg. proved sufficient to cause muscle relaxation. Larger amounts were tolerated when they were administered in fractional doses. Muscle relaxation appeared 20 minutes after a single moderate dose of curare had been given and lasted one and one-half hours. Thus, it appeared sooner, lasted longer, and was more pronounced than when the drug was given intravenously or intramuscularly. No untoward reactions were observed with these doses, although two rabbits that had received toxic doses of the drug died. Intraperitoneal administration of curare has since been successfully carried out in some human beings undergoing abdominal surgical intervention in the surgical clinic of Catania. It is suggested that this method may become a great aid not only in long surgical interventions requiring muscle relaxation for the entire period of the operation, but also in the immediate postoperative course, because it may eventually prevent muscle contraction and thus spare the patient pain. Intraperitoneal administration may also be indicated for peripheral and balanced anesthesia and become a substitute for intramuscular and intravenous administration of the drug.

Aggravation of Tuberculosis by Streptomycin.—It is known tha streptomycin, besides inhibiting the growth of a pathogeni agent, may also cause its resistance to and dependence on th drug. Clinical studies have revealed that in some patients subjected to streptomycin therapy the initial improvement is followed by an aggravation of the symptoms, which disappears a soon as the administration of the antibiotic is discontinued The author has called this phenomenon "streptomycin excitability." In this paper he reports on six patients out of 200 wit tuberculosis of various types treated with streptomycin. Th dose varied from 0.50 to 1 gm. daily for a total dose of 30 to 6 gm. Immediate improvement in the general condition was fo lowed by a deterioration, with malaise, increased temperatur cough, and headaches. The roentgenologic examination al revealed aggravation of the pulmonary conditions with loc exudative and ulcerative lesions. Administration of the dru was discontinued, and pneumothorax was performed. Accordi to the author, these six patients represent cases of streptomyc excitability because of the initial improvement of the sympto and the subsequent aggravation. He suggests that the particul sensitivity of bacteria present in the patients, who had nev before been treated with streptomycin, may be responsible f this reaction. Also a particular condition of local tissue aller may be present, so that the quiescent foci become the sour from which exudative lesions may originate.

Settimana Medica, Florence

39:259-282 (May 31) 1951

Insufficient Horizontal Tomography in Roentgenologic Study of Pleu Adhesions During Therapeutic Pneumothorax. Q. Fava, D. Capacc and C. Tarantelli.—p. 262.

Conservative Treatment of Perirenal Abscesses in Infancy. E. Re —p. 267.

*Clinical Observations on Intramuscular Use of New Strophantus Pre ration: Strophosid Combined with Panthesine. L. Corti and B. Gr —p. 270.

New Strophanthus Preparation.—Thirty-three patients w decompensated heart disease, 6 with hypertension, 9 with sc rosis of the myocardium, and 18 with valvular lesions, w treated with intramuscular administration of strophosid® preparation containing a cardioactive glycoside of Strophanth Kombé) combined with panthesine® (N-diethyl-leucinol es of paraaminobenzoic acid). The dose, determined by the t and severity of the lesion, was 0.25 mg. once or twice daily 0.50 mg. once daily for 15 to 25 days. The total dose adm istered was greater in patients with hypertensive lesions sclerosis of the myocardium, less in patients with valvu lesions. Results were good. Best results were obtained in patie who had decompensated heart disease associated with subac pulmonary congestion due to hypertension, sclerosis of the m cardium, or mitral insufficiency, and in those with increa venous pressure, edema, hepatomegaly, and paroxysmal tac cardia caused by auricular fibrillation. Results were less p nounced if the decompensation was of long duration, if it associated with renal lesions, and if tachycardia was not pres Diuresis increased, edema disappeared in a few days exc in two cases, venous pressure dropped, and dyspnea decrea and sometimes disappeared 24 to 48 hours after institution of treatment. In 60% of the patients, most of whom had moder hypotension, the systolic pressure increased; in the remain 40% it remained unchanged or was lowered. Changes in d tolic pressure were rare. Modifications of the electrocar graphic tracings were comparable to those brought about digitalis, but they suggested a greater similarity of therape action between digitalis and this preparation than between d talis and other strophanthin preparations administered in venously. The drug was well tolerated by most of the patie In a few the injection was moderately painful and caused lo redness. Disturbances of the gastrointestinal apparatus tributable to the drug were not observed in any patient. therapeutic action of intramuscularly administered stropho combined with panthesine® is more pronounced and more per nent than that of other strophanthin preparations administe intravenously. However, it has not been established yet whe these encouraging results are due to the action of the stropho itself or to its combination with panthesine.®

BOOK REVIEWS

Diabetes Control. By Edward L. Bortz, M.D., Chief of Medical Service B, Lankenau Hospital, Philadelphia. Cloth. $3.50. Pp. 264, with 16 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

The author, a national authority in the field of medical education, has written for the diabetic patient a volume designed to improve understanding of diabetes and its management. Its outstanding characteristics are its clear and direct exposition, its sound and conservative attitude toward the multiple problems involved in therapeutic methods, its complete coverage of the fundamentals of the disease, and its attractive binding, typography, and illustrations. The book is prepared with great care, both editorially and mechanically. Diagnosis, early recognition, the nature of the disorder, details of diet and insulin use, diabetes in childhood and in pregnancy, and diabetic complications are all discussed simply and effectively. Preventive measures for mouth, skin, and foot disorders are clearly defined. Insurance, employment, and psychological problems, as well as research, summer camps, and other matters of general interest are discussed authoritatively. Above all, the author's cheerful and optimistic philosophy about diabetes colors all information and could not fail to encourage readers of the book. This new guide deserves a high recommendation for study and use by diabetic patients and their families. There are many primers available, but few give such inspiring counsel from both intellectual and spiritual standpoints.

Metabolic Methods: Clinical Procedures in the Study of Metabolic Functions. By C. Frank Consolazio, Chief of Biochemistry, United States Army Medical Nutrition Laboratory, Chicago, Robert E. Johnson, M.D., D.Phil., Professor and Head of Department of Physiology, University of Illinois, Urbana, and Evelyn Marek, M.A., Biochemist, United States Army Medical Nutrition Laboratory, Chicago. Cloth. $6.75. Pp. 471, with 64 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

Detailed directions are given for performing the biochemical, microbiological, and physiological chemical assays required in studies of metabolic function; collecting and storing tissues, food, and body fluids, both in the laboratory (or hospital) and in the field; and carrying out a few additional clinical tests. The methods are those "used routinely . . . long enough to clarify the precautions essential for success."

Large diagrams are used so liberally and directions are so carefully worded and fitted into a uniform outline that a technician with a minimum of training should be able to get adequate results by following the directions in cookbook fashion. Those with more training will appreciate the fact that the material is organized in a way that allows rapid scanning.

There is a full index. Much data and nomograms needed in computing results are included. The printing is good, and the binding strong. Everyone concerned with clinical testing will wish to examine this work.

Operative Surgery. Edited by Sir Lancelot Barrington-Ward, K.C.V.O., Ch.M., F.R.C.S., Surgeon to H. M. King George VI. Second edition. Cloth. $13.50. Pp. 638, with 498 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

Since the first edition of this book was published 11 years ago, many changes have been made in both the articles and the illustrations. The volume represents the experience in practice and teaching of a group of men working together in one hospital, who have had wide experience in different branches of surgery. Although nearly all phases of surgery have been covered, some of the material is not in accordance with certain practices of American surgeons. The important thing, however, is that Mr. Barrington-Ward has presented in a single volume, adequately illustrated, a textbook of operative surgery that will be exceedingly useful to many surgeons. This volume should have an excellent reception.

Textbook of Obstetrics. By John F. Cunningham, M.D., M.A.O., F.R.C.P.I., Professor of Obstetrics and Gynaecology, University College, (N.U.I.) Dublin. Cloth. $7.50. Pp. 499, with 297 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The author of this textbook on obstetrics served as the master of the National Maternity Hospital for 10 years prior to his appointment to the chair of obstetrics and gynecology at University College, Dublin. The obstetric teaching embodied in this volume represents the practice at the National Maternity Hospital. Although it was written primarily for medical students, it should find a useful place among practitioners in Ireland. The contents include the anatomy and physiology of the reproductive organs, the diagnosis and management of normal pregnancy, the pathology of pregnancy, labor, and the puerperium, operative obstetrics, and a section on the baby. The text is brief, and there is little or no reference to the literature or the practice in other institutions. Numerous simple illustrations, for the most part original, help to clarify the discussion. Although most of the subjects are treated briefly, the text is sufficiently complete for good student teaching.

The pattern of obstetric practice in Ireland is somewhat different from that of the United States. Yet it is surprising how few basic differences actually exist. The Irish school has been loath to take up spinal anesthesia for delivery, and pubiotomy and symphysiotomy are still accorded a place in operative obstetrics. The uterine douche for hemorrhage is recommended. These criticisms do not detract from the value of the book for student teaching. One desirable feature of this volume is that the methods described and practiced are in accordance with the ethical standards of the Roman Catholic Church and should thus be helpful to physicians of any denomination who practice obstetrics in Catholic hospitals.

An Introduction to Organic Chemistry. By the late Alexander Lowy and Benjamin Harrow. Revised by Benjamin Harrow, Ph.D., Professor of Chemistry, and Percy M. Apfelbaum, Ph.D., Associate Professor of Chemistry, College of City of New York. Seventh edition. Cloth. $5. Pp. 480, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1951.

This textbook has the conventional arrangement of topics: the first section deals with the aliphatic compounds, the second with the aromatics, the third with the heterocyclics, and there are several chapters on special topics. Several classes of compounds, such as the carbohydrates, proteins, and amino acids, nucleoproteins, purines, cyanides, and other nitrogen compounds, as well as sulfur, phosphorus, arsenic, and the organometallics are discussed in the section between the aliphatic and aromatic compounds. The special topics section contains brief treatments of such subjects as synthetic polymers, dyes, terpenes, alkaloids, enzymes, vitamins, hormones, and organic nomenclature. Almost all of the chemical reactions given are illustrated by graphic equations. The compounds chosen for synthesis and discussion are usually those which are of practical interest. Numerous cross references are included throughout the text. The appendix includes a glossary, various constants for organic compounds, and sections on reference books and on Latin and Greek roots used in chemical terminology. The index is adequate.

Studio dei gemelli. Di Luigi Gedda. Prefazione del Prof. Cesare Frugoni. Cloth. 15000 lire. Pp. 1381, with 548 illustrations. Edizioni *orizzone medico*, Rome, 1951.

The problem of twins, as a phenomenon of nature, has attracted the attention of poets, writers, artists, sociologists, geneticists, biologists, anatomists, and pathologists throughout the ages. Although much has been written on the subject, this is the first complete and comprehensive study. Gedda has made use of all available data, including his own personal observations. This book will be of interest to scientists and everyone interested in biological and biopathological problems. It is well written and excellently illustrated.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

LINOLEIC ACID IN ECZEMA

To the Editor:—*Months ago I read a report of favorable results obtained in the treatment of eczema of infants by administration of linoleic acid. May I expect any results from this therapy in an adult? What doses would you suggest, and should it be used only by mouth or also locally (ointments)? Where and how is it possible to get linoleic acid?*

Mario E. Milite, M.D., New York.

Answer.—Although it is known that a scaling dermatitis can be produced in animals by a diet deficient in unsaturated fatty acids (Burr, G. O., and Burr, M. M.: *Biol. Chem.* **82:**345, 1929), there is little evidence to support the idea that any dermatosis in man is due to such deficiencies. Treatment of eczema with linoleic acid or any of the unsaturated fatty acids given orally is of questionable or no value (Epstein, N. N., and Glick, D.: *Arch. Dermat. & Syph.* **35:**427, 1937; Taub, S. J., and Zakon, S. J.: *J. A. M. A.* **105:**1675 [Nov. 23] 1935). There are a few advocates of unsaturated fatty acid therapy in infantile eczema (Finnerud, C. W.; Kesler, R. L., and Wiese, H. F.: *Arch. Dermat. & Syph.* **44:**849, 1941; Hansen, A. E., and others: *Am. J. Dis. Child.* **73:**1, 1947); Hansen adds that this therapy is of negligible value in adult eczema.

Local use of unsaturated fatty acids in atopic dermatitis appears to give the same results as bland indifferent ointments.

Unsaturated fatty acids, including linoleic acid, are present in vegetable oils, such as soy bean and corn oil, and also in lard.

ACNE VULGARIS

To the Editor:—*What is the primary cause of acne vulgaris? Is there a difference in racial susceptibility? Is there a correlation with occupation, e. g., farm workers as compared with industrial workers? Are geographical and climactic factors important?* *Jean Thompson Munzer, M.D., New York.*

Answer.—There is considerable evidence to indicate that estrogen-androgen imbalance is a major, if not the primary, cause of acne vulgaris. Foods rich in iodine or fat and hot and spicy foods play a contributory role, in that they irritate or eractivate the sebaceous apparatus. In some persons, racial ibility plays a part; inherently large and overactive aceous glands are prone to develop acne. The appli- on of grease or oils to an already oily skin may produce cne by mechanical plugging of pores. Thus certain machine workers and garage workers are more likely to have acne than are farmers. Climatic conditions also play some role, for it has always been noted that a sunny, dry climate is better for the patient with acne than is humid weather which activates the sebaceous apparatus. These are only a few of the many factors which influence acne, a complex and challenging condition.

LUPUS ERYTHEMATOSUS

To the Editor:—*Have any cases of discoid lupus erythematosus developing from the inspection of television tubes been reported? A 20-year-old woman, wearing plastic glasses to protect her eyes from explosion, has a small patch of typical lupus erythematosus over the right cheek, at the outside edge of the glasses and on exposed skin. Contact dermatitis has been eliminated. She also inspects radio tubes. The inspection, of course, is with the tubes lit. This work has been going on for 16 months, and the eruption is now of two months' duration. Inspection is at close range. Fluorescent lights are overhead.*

M.D., New York.

Answer.—It has long been known that ultraviolet rays may affect lupus erythematosus adversely. It has not been established, however, that such rays produce the disease, nor have other rays, such as x-rays or infrared rays, been causative. Neither radio tubes nor television tubes give off ultraviolet rays, so that they probably cannot be considered to produce or affect lupus erythematosus. Fluorescent lights, it is said, do produce some ultraviolet rays, but during the years they have been in use there have been no reports to suggest their association with discoid lupus erythematosus.

TESTS FOR CORONARY INSUFFICIENCY

To the Editor:—*In the Sept. 1, 1951, issue of* The Journal, *in Queries and Minor Notes, a doctor asked about the relative merits of the Levy and Master tests for coronary insufficiency. Your discussion of the merits of both tests with an understanding of the dangers involved was warranted.*

The frequency of false negative reactions, as well as the dangers involved in the use of the Levy anoxemia and exercise tests, has prompted the consideration of other tests. I would like to call attention to a test that has been in use for six years. By the intravenous injection of ergonovine maleate, the clinical and electrocardiographic picture of coronary insufficiency is produced (Stein, I.: Observation on the Action of Ergonovine on the Coronary Circulation: Its Use in the Diagnosis of Coronary Artery Insufficiency, Am. Heart. J. **37:**36, *1949; Stein, I., and Weinstein, J.: Further Studies of the Effect of Ergonovine on the Coronary Circulation,* J. Lab. & Clin. Med. **36:**66, 1950; *and The Ergonovine Test in the Diagnosis of Coronary Insufficiency Due to Hyperthyroidism,* New York State J. Med. **50:**24 [Dec. 15] 1950).

While the Levy anoxemia test produces an anoxia of the myocardium and the exercise test increases the work load of the heart, the ergonovine test apparently depends on a loca vasospastic action on the coronary blood vessels. Therefore safeguards against the dangers encountered in the anoxia and exercises tests can be more effectively employed in the ergonovine test. We performed over 300 tests, and no toxic effects were observed.

Our use of ergonovine did not produce the ill-effects reported by Scherf and Schlachman (Electrocardiographic and Clinical Studies on the Action of Ergotamine Tartrate and Dihydro-Ergotamine 45, Am. J. M. Sc. **216:**673, 1948) *who used ergotamine tartrate, related to, but not identical with ergonovine maleate.*

The ergonovine test is more sensitive than either of th other two. In no instance have we observed a false positiv reaction. It is felt, however, that the three tests have a plac in investigations of this type.

Joseph Weinstein, M.D.,
950 Ocean Ave., Brooklyn 26.

REACTIONS TO PENICILLIN

To the Editor:—*In the answer to the question "Are sensitivit reactions more common following orally administered o parenterally administered Penicillin?" in Queries and Mino Notes, Sept. 8, 1951, the consultant mentions that orally ad ministered penicillin was given to some 500 patients and that only one hypersensitivity reaction was seen. He then adds "There have been seen no fevers or other sensitivity reactions with orally administered penicillin."*

In 1948, I reported in the "Letters of the International Correspondence Club of Allergy" a case of generalized urticaria and fever of four days' duration in a physician who, for prophylactic reasons, had taken penicillin orally for two days. He had had minor surgery 10 days prior to the onset of the hypersensitivity reaction. Since then there have been additional reports in the literature of urticarial eruption following orally administered penicillin.

William Sawyer Eisenstadt, M.D.
406 Medical Arts Bldg.
Minneapolis 2.

RECURRENT DEPRESSIONS

To the Editor:—*I am an interested reader of your department of Queries and Minor Notes. I read them all, not just the orthopedic part. In* The Journal *of Oct. 20, 1951 (page 798), a physician from Missouri asks about recurrent depressions. After reading this question and the answer, I wonder whether the inquirer and the consultant would not both profit by reading Walter C. Alvarez' article entitled "Small, Commonly Unrecognized Strokes"* (Postgrad. Med. **4:**96 [Aug.] 1948).

Duncan C. McKeever, M.D.
836 Bankers Mortgage Bldg., Houston, Texas.

THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 2
CHICAGO, ILLINOIS
JANUARY 12, 1952

COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION

STUDY OF ONE HUNDRED SEVENTY-FIVE "CARDIACS" WITHOUT HEART DISEASE

Leonard J. Goldwater, M.D., Lewis H. Bronstein, M.D.
and
Beatrice Kresky, M.D., New York

In 1941 a Work Classification Unit was established as a part of the Third (New York University) Division Adult Cardiac Clinic of Bellevue Hospital, the initial purpose of which was to assist the New York State Employment Service in securing suitable placement for persons with heart disease. The unit functions in a consulting capacity and does not attempt to render any treatment. From the outset the staff has recognized the possibilities of using the activities of the unit for educational purposes and of using its records for research. The organization and operation of the unit have been described in an earlier publication.[1]

Patients referred to the Work Classification Unit are examined in accordance with standards developed by the New York Heart Association, consisting of a complete cardiological study and diagnosis based on accepted criteria.[2] All questionable cases are examined by two or more cardiologists. During the period 1941-1950 a total of 705 persons were referred to the unit, of whom 631 were studied completely. A detailed analysis of these patients and their employment experience following diagnosis and classification is in preparation and will be published in the near future. In 74 cases no diagnosis was established, since these patients failed to return to the clinic after their first visit. All persons seen at the unit were referred because of employment difficulties attributed to heart disease. Of the 631 who were adequately studied, 175 (about 28%) were found actually to have no heart disease at all. The present report is concerned with these 175 "cardiacs" without heart disease. A particular effort was made to ascertain the basis for the original diagnosis and its effect on the subsequent life of the patient.

AGE AND SEX OF PATIENTS REFERRED

The age and sex distribution of the patients referred to the Work Classification Unit cannot be taken as representative of all persons with heart disease nor of all cardiac clinic patients.[3] The group seen at the unit contained a preponderance of males under 35 years of age, a group from which a substantial part of the labor force of the country is drawn. On the other hand the proportion of males and females in different age groups in the 175 patients without heart disease roughly paralleled the age-sex distribution of the remainder of the 631 persons who were fully examined at the unit. The actual numbers and percentages are shown in Table 1.

TABLE 1.—*Age and Sex of Four Hundred Fifty-Six Patients with Cardiac Disease and One Hundred Seventy-Five Patients Without Cardiac Disease Given Diagnoses at the Work Classification Unit, 1941-1950*

	With Cardiac Disease						Without Cardiac Disease					
	Men		Women		Total		Men		Women		Total	
Age, Yr.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Under 35	162	43	39	53	201	45	101	67	13	52	114	65
35-54	142	37	26	35	168	37	37	25	8	32	45	26
55 and over	78	20	9	12	87	18	12	8	4	16	16	9
All ages	382	100	74	100	456	100	150	100	25	100	175	100

This study was supported by a grant from the New York Heart Association.

Professor of Industrial Hygiene, Columbia University School of Public Health (Dr. Goldwater).

This report is the third of a series published by the staff of the Work Classification Unit, Adult Cardiac Clinic, Third (New York University) Medical Division, Bellevue Hospital.

The following members of the staff have contributed to the work that forms the basis for the reports: Drs. Lewis H. Bronstein (Associate Chief of the Unit), Herman J. Bennett, Anthony Brittis, Doris Escher, Sigmund Falk, John H. Iselin, Beatrice Kresky, Warren W. Lacey, Otaker Machek, Sol Parent, Samuel S. Sverdlik, Gerald Weinberger, Jean E. Wolfson; Miss Martha Ashcraft (Administrator), Miss Lois Mills (Research Assistant), and Mrs. Gladys Nunn (Vocational Counsellor). Consultation service was provided by Dr. Adolph R. Berger (Associate Chief of the Clinic) and Dr. Charles E. Kossmann (Chief of the Clinic).

1. Kossmann, C. E.; Goldwater, L. J., and de la Chapella, C. E.: Selective Placement of Patients with Heart Disease in Competitive Employment, Occup. Med. 33:531, 1947.

2. Nomenclature and Criteria for Diagnosis of Diseases of Heart, Criteria Committee, New York Heart Association, New York, 1940, p. 17.

3. Kresky, B., and Goldwater, L. J.: Occupational Potentialities of Cardiac Patients, Am. Heart J. 27:623, 1944. Occupational Analysis of 580 Cardiac Clinic Patients, Staff of the Work Classification Unit, Adult Cardiac Clinic, Circulation 3:289, 1951.

PLACE OF ORIGINAL DIAGNOSIS AND REASON FOR INITIAL EXAMINATION

The largest single group among the noncardiac patients were those in whom a diagnosis of heart disease had been made on routine examination in connection with induction into or service in the armed forces during World War II. These persons, of whom there were 38, accounted for nearly one-fourth of the entire number. The second largest group, numbering 26, were those who had gone to private physicians because of symptoms referable to the heart. School physicians, hospital clinics, insurance examiners, and industrial physicians all contributed a share of the cases. The circumstances of the original diagnosis of heart disease are given in Table 2. Although 19 patients had been told prior to their examination at the Work Classification Unit that they did not have heart disease, they still persisted in their conviction that they were cardiacs. Most of these 19, as well as many of the others, showed obvious evidence of anxiety. In spite of the fact that they had been told that heart disease was not present, they had not been convinced that this was so.

TABLE 2.—*Reasons for Initial Visit to Physician and Agency That Diagnosed Cardiac Disease in One Hundred Seventy-Five Patients Regarded As Without Cardiac Disease by the Work Classification Unit*

			Diagnosis of Cardiac Disease Made By				
Reason for Visit to Physician	Total	Previous Diagnosis of No Cardiac Disease	Hospital Clinic	School	Armed Forces	Private Physician	Insurance or Industrial Physician
Routine examination	76	5	1	17	38	4	11
Cardiac symptoms	58	10	10	0	12	26	0
Noncardiac symptoms	15	3	1	0	0	11	0
Unknown	26	1	7	0	1	16	1
Total	175	19	19	17	51	57	12

TABLE 3.—*Diagnoses by Work Classification Unit and Original Diagnoses in One Hundred Seventy-Five Noncardiac Patients*

	Work Classification Unit Diagnoses				
Original Diagnoses	No Heart Disease, Plus Functional Murmur §	No Heart Disease, Plus Essential Hypertension	No Heart Disease, Plus Other Disease	No Heart Disease, Signs, or Symptoms	Total
Anxiety state	6	2	2	9	19
Rheumatic heart disease *	9	1	1	7	18
Hypertension and arteriosclerotic heart disease	0	1	1	1	3
Hypertensive heart disease	0	6	3	1	10
Slight heart disease	2	0	1	0	3
Enlarged heart †	2	0	0	7	9
Ruptured aorta	0	0	1	0	1
Possible and potential heart disease	0	0	3	3	6
Coronary occlusion	0	0	2	2	4
Congenital heart disease	1	0	1	0	2
Auricular fibrillation	0	1	0	0	1
Acute rheumatic fever	2	0	0	1	3
Systolic murmur, weak heart	5	0	1	7	13
Chronic valvular heart disease	2	0	0	1	3
60% mitral insufficiency	0	0	0	1	1
Myocardial damage	1	0	0	1	2
Mitral endocarditis ‡	0	0	0	2	2
Idiopathic heart disease	0	0	0	1	1
Enlarged aorta	0	0	0	1	1
Angina pectoris	0	0	0	4	4
Athletic heart	0	0	0	1	1
Heart disease, unspecified	14	0	6	48	68
Total	44	11	22	98	175

* Two with endocarditis, one with mitral insufficiency, one with mitral stenosis, one with mitral insufficiency and aortic insufficiency.
† Two with mitral insufficiency.
‡ With mitral insufficiency and left ventricular enlargement.
§ Functional murmur (transitory or innocent murmur).

SIGNS AND SYMPTOMS

It appeared that in most instances the erroneous diagnosis of heart disease was due to faulty interpretation of signs and symptoms that had been present at some time, although in a number of cases no history of the existence of past or present abnormal signs or symptoms could be elicited. A substantial number of the noncardiac patients had merely been told after a routine examination that there was something wrong with their hearts. Since most of these had had no abnormal symptoms, it must be presumed that a murmur or an irregularity of rhythm had been found. This presumption is supported by the finding of a functional murmur in 14 of the 68 cases in which the basis for the original misdiagnosis could not be definitely ascertained. The existence of transitory abnormal signs, which had disappeared between the time of the original examination and that of the Work Classification Unit, may account for an additional number of the conflicting diagnoses.

The original "diagnoses" in those cases in which they were obtainable make an impressive array (Table 3). On the basis of the examination at the Work Classification

Unit it was possible to find a clue to the misdiagnosis in about one-half of the cases. Heart murmurs, interpreted at the unit as being purely functional (transitory, innocent), accounted for 44 cases, about one-fourth of the entire noncardiac series. Essential hypertension uncomplicated by demonstrable cardiac involvement accounted for 11 cases, and diseases other than heart disease were diagnosed in 22 instances. This latter group included cases of thyrotoxicosis, pulmonary tuberculosis, gastrointestinal neoplasm, and late latent syphilis. In Table 3 the original diagnoses are compared with those made at the Work Classification Unit.

Among the 60 patients who originally had visited physicians because of disquieting symptoms, the most frequent complaints had been fatigue, dyspnea, precordial pain, and palpitation. A smaller number had had noncardiac symptoms, and a few had sought medical advice because of anxiety about the heart. A small number of those with symptoms that they themselves attributed to the heart had been told, but not convinced, that there was no cardiac abnormality. Several others, after being made aware of the existence of a murmur, failed to accept assurance as to the benign nature of the finding. This reluctance to accept the favorable and readiness to accept the unfavorable was a prominent manifestation of the anxiety exhibited by about one-half the patients of the entire series.

Table 4.—*Physical Restrictions Imposed on One Hundred Seventy-Five Noncardiac Patients*

	Limitations Advised			
Patient Limiting Himself	Yes	No	Unknown	Total
Yes	19	7	5	31
No	34	60	39	133
Unknown	3	0	8	11
Total	56	67	52 *	175

* Type of information not usually obtained on routine cardiac history.

LIMITATION OF ACTIVITY

Information relating to limitation of activity was obtained from all of the 175 patients in the series. In the early years of operation of the Work Classification Unit the importance of the patient without cardiac disease was not fully appreciated, and consequently no special effort was made to secure full particulars in some of the cases seen during this initial period. When it became apparent that a substantial number of referred patients proved to have no heart disease, more detailed histories were obtained in this group.

The response of the noncardiac patients to the advice of their physicians is summarized in Table 4. This table shows that limitations were advised for 56 persons, but of this number only 19 obeyed the physician's edict. Of the 31 persons who were limiting their activities, 7 were doing so without or in spite of a physician's advice. Many of those who, contrary to their physician's advice, had not observed restrictions showed evidence of guilt or fear or both, with consequent emotional conflict. At least 17 different kinds of restrictions were imposed on the 56 patients who had been advised to limit their activities, ranging from "take it easy" to restrictions for the completely disabled. The nature of the restrictions is shown in Table 5.

EMPLOYMENT STATUS

It was stated in the opening paragraph that the initial function of the Work Classification Unit was to assist the New York State Employment Service in finding suitable jobs for persons who were believed to have heart disease. All of the patients seen at the unit were not unemployed; in fact, a considerable number were referred for the purpose of securing an opinion as to the suitability of their current jobs. As can be seen in Table 6, a total of 70 of the 175 patients were working at the time they were examined at the Work Classification Unit. Of the 105 who were not working, 25 were idle because of a physician's advice and hence attributed their unemployment to heart disease, while 68 ascribed their idleness to noncardiac causes. (In the remaining 12 cases, the causes for the unemployment were not recorded.) Although, as was stated, 68 unemployed persons attributed their unemployment to noncardiac reasons, it was nonetheless true that inability to find a job was often inability to find a suitable job, that is, one which they felt would not subject them to excessive physical exertion. A number of the jobless failed to apply for work in establishments that were known to require a preemployment examination, being certain that they would be rejected.

Table 5.—*Recommendation or Classification Made by Physician Making Original Cardiac Diagnosis in Fifty-Six Noncardiac Patients*

Recommendation or Classification	Number
Lay off from job	2
Refuse employment	3
No lifting or prolonged activity	1
No strenuous labor	4
Sedentary work	5
Quit work	4
Take it easy	5
No stair-climbing	2
Change occupation (carpenter)	1
Be careful	1
Limit all activity	2
2B *	6
3C *	5
2C *	3
3D *	1
Completely disabled	1
No exercise	2
Unknown or unspecified	8
Total	56

* Functional and therapeutic classifications according to terminology of the New York Heart Association.

Table 6.—*Employment Status by Occupational Classification of One Hundred Seventy-Five Noncardiac Patients*

		Reasons Not Working		
Occupational Classification *	Working	Cardiac	Noncardiac †	Unknown
0	2	0	0	0
1	13	3	18	1
2a	1	0	0	0
4	10	2	4	1
5	21	4	16	0
6	23	16	30	0
Unknown	0	0	0	10
Total	70	25	68	12

* Occupational classification of War Manpower Commission: 0 professional, managerial; 1 clerical, salesman, student; 2a housewife; 4 skilled; 5 semiskilled; 6 unskilled.

† Unable to find acceptable employment.

EMOTIONAL REACTIONS

In recent years increasing recognition has been given to the importance of emotional factors in causing disability in persons suffering from heart ailments.[4] Psychic disturbances were a prominent feature among the group of noncardiac patients in this series. In some these aberrations antedated the diagnosis of heart disease and undoubtedly played a part in leading to the diagnosis. Such patients could properly be said to fit the picture of cardiac neurosis, and they could not be convinced that no organic defect of the heart existed. Their only hope seemed to lie in extended psychotherapy. A second group, with less deep-seated anxiety, accepted the reassurance given them at the Work Classification Unit and were guided into employment. Success in these cases can be attributed largely to the painstaking care with which they were handled and the excellent rapport between patient and physician, both made possible by the avoidance of haste or "mass production" methods at the unit.

A number of patients reacted with incredulity when told that they had normal hearts. Some wanted to believe but were afraid to do so, others felt that the physicians were just trying to make them "feel good." A few reacted with mild hostility, feeling that the unit was anxious to have them put to work without regard to the effect on their health. A considerable number of the patients without heart disease appeared to have rejected, either consciously or unconsciously, the idea that they were sick at the time the original misdiagnosis was made. Some of these showed great joy in having their own ideas confirmed; others were less demonstrative. The fact that none showed hostility toward the physicians who had originally made the erroneous diagnosis is a tribute to the care taken by the staff at the Work Classification Unit in presenting their conclusions to the patients. A common procedure was to state that something had been present in the past to justify a diagnosis of heart disease ut that the condition had cleared up. In some instances which treatment had been given, the disappearance of ns and symptoms was attributed to the success of the erapy. When the intelligence of the patients permitted, the conflicting views were ascribed to honest differences in opinion on the part of examining physicians. The approach in each case was governed by the personality and background of the patient, and the explanation expected to be most convincing to the patient was given.

COMMENT

It has been widely recognized that an unwarranted diagnosis of heart disease is not infrequently made in persons who have symptoms referable to the cardiovascular system or who are found to have benign murmurs of the heart. Sir Thomas Lewis, in reviewing the cardiac diagnoses made by British army physicians in World War I, established the fact that over 80% of the diagnoses of organic heart disease were erroneous.[5] Kilgore has stated that thousands of soldiers in the American army who did not have heart disease were carried on disability ratings with mistaken diagnoses of myocarditis, angina pectoris, mitral insufficiency, and other conditions.[6] These statements are significant in relation to the present series, since military medical examinations accounted for the largest single segment.

The importance of iatrogenic factors in cardiac disability has received some, but perhaps not sufficient, attention in the medical literature.[7] There is little doubt that iatrogenicity was a major factor in the disability of a substantial number of the patients in the present series. Oille[7b] has stated that 60% of the patients who consult a cardiac specialist do so because of anxiety about the heart arising from suggestion following the careless or inconsidered remarks of a physician, and Conner [8] many years ago wrote that a cardiac neurosis frequently has its outset in the statement of a physician or life insurance examiner that the heart is abnormal. Limitation of activity may be self-imposed or it may be imposed or advised by a physician. Many cardiologists today feel that much needless disability has been created through ill-advised restrictions placed upon the physical activities of persons who actually have heart disease. When noncardiac patients are advised to limit their activities as a result of incorrect diagnosis, the result is calamitous. Not only needless disability has been created but irreparable psychic trauma also is often produced.

In the modern concept of preventive medicine a physical examination is recognized as an all-important feature of any program. Routine examinations and "screening" procedures are being applied in ever-increasing numbers in schools, in industry, and among other civilian groups. Large numbers of young men are again being examined in connection with military service. It seems particularly timely to point out again that what is designed to serve as a preventive measure may prove to be just the opposite if symptoms and signs suggestive of heart disease are in judiciously dealt with. It is to be hoped that the presen period of military and industrial mobilization will no result in the creation of another large number of cardiac without heart disease.

SUMMARY

The records of 175 persons given erroneous diagnose of heart disease at some time in their past life were re viewed. Nearly half had been given a diagnosis of hear disease on a routine examination by physicians in th armed forces, in schools, and in industry. Many wer given diagnoses of cardiac disease by private physician on the basis of anxiety symptoms simulating cardiovascular diseases, such as fatigue, dyspnea, precordial pain, and palpitation. A number of these misdiagnoses had their origin in confusing physical signs, such as benign systolic murmurs, tachycardia, and elevation of blood pressure. About one-fifth of the patients neither complained of cardiovascular symptoms nor had any physical signs that could be confused with heart disease. Many of these noncardiac patients, young men who might have been gainfully employed, were advised to restrict their activities, and 25% were not working because of alleged heart disease. The importance of careful evaluation and judicious discussion of signs and symptoms referable to the cardiovascular system is pointed out as a preventive measure against iatrogenic heart disease.

600 W. 168th St. (Dr. Goldwater).

---

[4] Jezer, A.: Rehabilitation of Cardiac, New York Med. **6**:17, 1950.

[5] Lewis, T.: Soldier's Heart and Effort Syndrome, ed. 2, London, Shaw & Sons, Ltd., 1940.

[6] Kilgore, E. S.: Symposium on Medical Preparedness: Heart in Military Service, J. A. M. A. **117**:258 (July 26) 1941.

[7] (*a*) Auerback, A., and Gliebe, P. A.: Iatrogenic Heart Disease: Common Cardiac Neurosis, J. A. M. A. **129**:338 (Sept. 29) 1945. (*b*) Oille, J. A.: Cardiac Neurosis, Canad. M. A. J. **45**:1, 1941. (*c*) Drake, F. R.: Iatrogenic Factors in Illness, Am. J. Med. Sc. **215**:103, 1948.

[8] Conner, L. A.: Psychic Factor in Cardiac Disorders, J. A. M. A. **94**:447 (Feb. 15) 1930.

ACUTE ENDOCARDITIS AS A COMPLICATION IN BACTERIAL PNEUMONIA

Emanuel Applebaum, M.D., Michael S. Bruno, M.D.
and
Elliot Hochstein, M.D., New York

Acute endocarditis has been recognized as a grave complication of bacterial pneumonia, although fortunately it occurs infrequently. In the past this form of endocardial infection was of interest mainly to the pathologist, since few, if any, pneumonia patients with this complication recovered. With the advent of antibiotic therapy the status of this form of endocarditis has been altered to some extent and several recoveries have been recorded in the recent literature. However, the case fatality rate in bacterial endocarditis as a complication of pneumonia remains high.

Recently we had an opportunity to study four cases of bacterial pneumonia complicated by acute endocarditis and we were impressed in each instance with the delay in the diagnosis of the endocardial infection and the presence of certain striking clinical and pathologic changes. It is the purpose of this paper to present these cases in detail, to emphasize the more important diagnostic features of the complicating endocarditis, to direct attention to the nature of the valvular lesion and its correlation with the hemodynamic functional alterations, and to discuss briefly the influence of antibiotic therapy on the endocardial infection.

REPORT OF CASES

CASE 1. *History.*—F. W., a man aged 47, was admitted to Bellevue Hospital for the second time on Feb. 2, 1948, with complaints of severe dyspnea, orthopnea, ankle edema, and hemoptysis of two weeks' duration.

The patient was first admitted on Oct. 12, 1947, with pneumonia in the lower lobe of the left lung due to Diplococcus pneumoniae, type 33. Four days after admission meningitis due to the same organism developed. The patient was given penicillin intramuscularly in doses of from 400,000 to 500,000 units daily for 17 days. In addition, he received three intrathecal injections of penicillin of 100,000 units each. Response to the therapy was rather slow at first, but by the 19th hospital day the signs of meningitis and pneumonia had disappeared. The patient's heart sounds, initially obscure, were heard more distinctly as the pneumonic process resolved. A moderately loud diastolic murmur was then heard over the aortic area and at Erb's point. A systolic murmur was audible over the mitral area. There was some question as to whether a presystolic murmur was audible over the same area. The left ventricle was enlarged.

When ambulation was started, symptoms and signs of congestive heart failure appeared, necessitating the use of digitalis, mercurial diuretics, and a low-salt diet. The patient was discharged from the hospital on Jan. 9, 1948. He was given instructions regarding diet and medication and advice to report to the cardiac clinic for observation. During the next few weeks, however, the patient failed to follow the instructions; consequently, symptoms of severe myocardial failure developed again, including dyspnea, orthopnea, cough, hemoptysis, and edema of the ankles. The rapid progression of the symptomatology, as well as a severe shaking chill, led the patient to seek readmission to the hospital on Feb. 2, 1948.

His past history revealed the presence of a syphilitic infection in 1918, for which he had received antisyphilitic therapy; the history was otherwise not remarkable.

Physical Examination.—On admission the patient appeared acutely ill and was in considerable respiratory distress. He was markedly dyspneic and was also somewhat disoriented. The temperature was 101 F, the pulse rate 110, the respirations 46 per minute, and the blood pressure 140/50. There was no tracheal tug, but the neck veins were distended and filled from below. There were no petechiae. Examination of the lungs revealed dulness and bronchial breath sounds at the base of the right lung posteriorly, below the angle of the scapula. Many moist rales were heard over the lower halves of both lungs. The heart was enlarged, with the point of maximal impulse palpable in the fifth intercostal space, 10 cm. to the left of the sternum. A regular sinus tachycardia prevailed. A rather loud double murmur was heard at the base and was most audible at Erb's point. The diastolic murmur was transmitted down the left border of the sternum to the apex. A double murmur was heard at the mitral area. The liver edge was palpable 2 fingerbreadths below the right costal margin. There was 4+ pitting edema of the lower extremities. The remainder of the physical examination revealed no significant abnormalities.

Laboratory Examination.—The red blood cell count was 4,050,000, with 9.5 gm. of hemoglobin per 100 cc., and the white blood cell count was 19,800 with 90% polymorphonuclear cells, of which 25% were immature, 5% lymphocytes, and 5% monocytes. The urine was essentially normal. The sputum was copious, purulent, and blood streaked, and showed a predominance of D. pneumoniae, type 5. The blood culture was also positive for this organism. A roentgenogram of the chest revealed evidence of a pneumonic consolidation of a major portion of the left lung, with small effusions at both bases. The heart was enlarged in all diameters. A lumbar puncture yielded a clear fluid with normal findings. The electrocardiogram was within normal limits.

Treatment and Course.—Aqueous penicillin, 100,000 units every three hours, was administered intramuscularly. Tourniquets were applied to three extremities and rotated every 30 minutes. Fifty cubic centimeters of 50% glucose, 0.480 gm. of aminophylline, 0.2 mg. of digitoxin, and 2 cc. of meralluride (mercuhydrin® sodium) were administered intravenously. Treatment with positive-pressure oxygen was instituted at once. The patient was in extremely poor condition, and his respiratory embarrassment continued unabated. There was no evidence of clearing of the lungs or decrease of the peripheral edema. Although the patient's temperature dropped to normal in 24 hours, his pulse rate became more rapid and stupor supervened. The patient died 40 hours after admission.

Postmortem Findings.—Only the pertinent findings are recorded. The right lung was the seat of an extensive confluent lobular consolidation, involving all three lobes. A considerable portion of the lower lobe of the left lung was similarly involved. The lower portion of the left pleural space was obliterated by dense fibrous adhesions. The heart weighed 580 gm. The left ventricle was dilated; the wall of the left ventricle was 18 mm. thick, and that of the right ventricle, 5 mm. The right coronary cusp of the aortic valve was perforated in two places. The larger perforation, centrally located, measured 4 mm. in diameter and had a pea-sized vegetation attached to the ventricular aspect of one edge. A second perforation, 2 mm. in diameter, was also seen. The aortic ring was not dilated.

Microscopic examination revealed the presence of edema fluid and "heart failure" cells in some sections of the lungs. Clumped polymorphonuclear leukocytes, cellular debris, and fibrin were found in many lobules of the middle lobe of the right lung, while most of the alveoli of the lower lobe of the left lung were filled with mononuclear cells and proliferating fibroblasts. There was hypertrophy of the myocardial fibers of the left ventricle and considerable fibroblastic reaction at the base of the aortic valve cusp. In the distal edge of this cusp were bands of hyaline con-

---

From the Department of Medicine, Post-Graduate Medical School of the New York University-Bellevue Medical Center and the Fourth Medical (New York University) Division, Bellevue Hospital, and from the Medical Service, Sydenham Hospital.

nective tissue, polymorphonuclear leukocytes, proliferating fibroblasts, and two perforations.

Final Anatomic Diagnosis.—The final diagnosis included: chronic pneumonia in the lower lobe of the left lung with fibrous pleural adhesions; confluent lobular pneumonia in the upper, middle, and lower lobes of the right lung; acute bacterial endocarditis, which was healing, with perforation of the right coronary cusp of the aortic valve; and hypertrophy and dilatation of the heart.

Comment.—On his first admission this patient presented definite pneumonia associated with bacteremia due to D. pneumoniae, type 33, and several days later meningitis due to the same organism developed. There was no evidence of endocardial involvement at that time. Penicillin therapy resulted in a marked improvement in the pneumonic process and subsidence of the meningitis. On the 19th day, however, the patient revealed signs of an aortic regurgitation and enlargement of the heart to the left. Congestive heart failure developed, but this was well controlled with the usual cardiac regimen.

On his second admission the patient presented a picture of severe congestive heart failure, as well as signs of pneumonia and bacteremia due to D. pneumoniae, type 5. The terminal infection, combined with the severe heart failure, led to his rapid death.

The necropsy findings in this case were of considerable importance, particularly the cusp perforations which undoubtedly were responsible for the development of an active aortic regurgitation in a relatively short time. It is also important to note that this aortic incompetence led in a short time to marked cardiac enlargement, with hypertrophy as well as dilatation. Another point of interest is the fact that the vegetative endocarditis showed considerable, but not complete, healing. Unfortunately, the getations were not examined or cultured for the pres e of organisms.

In this case two adverse effects may be noted. First, penicillin therapy during the first admission was apparently inadequate to prevent the development of endocarditis or to suppress an endocardial infection which might have been present already. Second, even though considerable healing of the endocardial infection followed the antibiotic therapy, the cusp perforations led to a dynamic aortic regurgitation which resulted in almost continuous, severe congestive heart failure. To some extent this may be regarded as a therapeutic paradox.

CASE 2.—*History.*—T. L., a man aged 45, was admitted to Sydenham Hospital on Dec. 16, 1948, with the chief complaints of chills, fever, severe chest pain on the left lower side, and cough productive of a yellowish and blood-tinged sputum, of three days' duration. The illness was preceded by an acute upper respiratory tract infection which had not confined him to bed. The past history was essentially negative.

Physical Examination.—On admission the patient appeared acutely ill, was dyspneic, and complained of severe pains in the left side of the chest. The temperature was 103 F, the pulse rate 120, and the respirations 30. The blood pressure was 108/70. The pharynx was congested. Examination of the lungs showed dullness, distal bronchial breathing, and fine crepitant rales over the lower lobe of the left lung posteriorly. The rest of the pulmonary field presented normal physical signs. The heart was not enlarged, and no murmurs were heard. The sinus rhythm was regular, and the sounds were of good quality with the pulmonic second sound greater than the aortic second sound. The liver and spleen were not palpable. There was no peripheral edema. The other results of the examination were not remarkable. A diagnosis of pneumonia was made.

Laboratory Examination.—The red blood cell count was 4,200,000, with 12 gm. of hemoglobin per 100 cc., and the white blood cell count was 16,000, with 73% polymorphonuclear cells, 15% lymphocytes, and 12% monocytes. The urine had a specific gravity of 1.015, with a trace of albumin and a few white blood cells. The sputum showed mixed bacterial flora, predominantly D. pneumoniae. The serologic test for syphilis was negative. The blood urea nitrogen was 12.3 mg. per 100 cc. A roentgenogram of the chest showed a consolidation of the lower lobe of the left lung but no cardiac enlargement.

Treatment and Course.—On admission the patient received a single dose of 300,000 units of penicillin. The same dose of the antibiotic was repeated daily for four days. The patient's respiratory distress and chest pain on the left disappeared within 24 hours, and the temperature fell to 99.4 F within 48 hours.

On the fifth day, concomitant with a temperature rise to 105.8 F, an aortic diastolic murmur was heard for the first time. The blood pressure was then 115/44, and the pulse was of the Corrigan type. The signs of consolidation in the lower lobe of the left lung persisted. A blood culture made on this day revealed no growth. The dose of penicillin was increased to 300,000 units twice a day.

Between the 5th and 10th days the temperature ranged between 102 and 104 F. At this time some additional signs were noted, including rales in the right lung and a faint pericardial friction rub. The blood pressure was then 170/90. The presence of pericarditis was suggested also by the electrocardiogram which showed an elevation of the RS-T segment in leads 1 and 2. Because of the evidence of endocardial and pericardial involvement, the penicillin dosage was raised to 900,000 units per day.

During the succeeding few days the patient appeared very toxic and in acute distress and became progressively more dyspneic. The physical signs at the left base at this time were flatness, absent tactile fremitus, and distant bronchial breathing There was also a distinct pleuropericardial friction rub over the left side of the chest anteriorly. It was apparent that the pneumonia was complicated by pleuritis as well as pericarditis and endocarditis. Thoracentesis of the left pleural cavity yielded on one occasion 30 cc., and on another 500 cc., of amber-colored turbid fluid which contained many polymorphonuclear cells but no organisms. Pronounced anemia also developed with a red blood cell count of 2,500,000 and 7 gm. of hemoglobin.

Because of the severity of the clinical picture the amount o penicillin was further increased on the 12th day to 2,400,000 units daily and supplemented with sulfadiazine. Despite this intensive combined therapy and the adjuvant use of blood transfusions and digitalis, the patient's condition deteriorated rapidly The heart showed progressive enlargement and failure of the lef ventricle supervened. The fever, however, was low grade, excep for a preterminal rise to 102 F. Death occurred on the 19th day

Postmortem Findings.—The lungs were not grossly consol dated. There were fibrous adhesions over the lower lobe of th left lung but no free fluid in either pleural space. The pericardia space was obliterated by fibrous adhesions that were easily separated. The heart weighed 350 gm. There was slight irregula thickening of the distal margins of the tricuspid and mitral leaflets and of the adjacent chordae tendineae. The left ventricl was markedly dilated but not hypertrophied. There was irregular, moderate thickening of the cusps of the aortic valve, wit some dilatation of the ring. On the ventricular aspect of the right coronary cusp, there was a small, soft vegetation about the size of a pea.

The lung sections showed resolving pneumonia in the lowe lobe of the left lung. There was widening of the alveolar sept and engorgement of the capillaries. Sections of the heart revealed a slight perivascular fibrosis wthout Aschoff bodies. O the right coronary cusp of the aortic valve there was an ovoid moderately cellular vegetation. At the base of the vegetation within the cusp, there was an infiltration of polymorphonuclea leukocytes that extended into the adjacent pericardial wedg The pericardium was involved in a chronic inflammatory reaction with fibrosis, with acute components in some sections.

Postmortem cultures of aortic blood and pericardial exuda readily yielded D. pneumoniae, type 7.

Final Anatomic Diagnosis.—The final diagnosis included pneumonia in the lower lobe of the left lung which was resolving; inactive rheumatic heart disease, involving the mitral, tricuspid, and aortic valves; acute bacterial endocarditis in the aortic valve which was healing; and pulmonary congestion and edema.

Comment.—It seems clear from the clinical and roentgenographic evidence that on admission this patient had a pneumonia in the lower lobe of the left lung but no obvious cardiac disease. For a few days the patient appeared to be responding to penicillin therapy, which was rather moderate. However, signs of aortic insufficiency, as well as pericarditis, soon developed. From that time on, the clinical course was progressively downward with rapid development of dilatation of the left ventricle and intractable heart failure.

The observation at necropsy of thickening of the mitral and tricuspid valves, as well as of the aortic cusps, suggested the presence of antecedent rheumatic valvular disease. The superimposed vegetative lesion on the right coronary cusp was definitely of bacterial origin and gave evidence of partial healing. Although a blood culture made when the patient had received penicillin for five days was sterile, the pneumococcic etiology of the endocardial and pericardial infections was established by the positive postmortem cultures of the aortic blood and pericardial exudate. It is interesting to note that a dynamic aortic regurgitation developed despite the smallness of the vegetative lesion and the absence of cusp erosion. It appears that the moderate deformity of the valve, together with the slight dilatation of the ring, was sufficient to cause aortic incompetence.

CASE 3.—*History.*—H. K., a man aged 41, was admitted to Bellevue Hospital on March 15, 1948, with the chief complaints of chills, fever and a productive cough of three weeks' duration, and right anterior chest pain for approximately 10 days. The patient was apparently in good health up to the time the cough developed. For the next 20 days this cough which was productive of rather large quantities of nonfoul, nonbloody, thick yellow sputum, continued unchanged and was accompanied by malaise and marked anorexia. While an exact temperature was not recorded, the patient admitted feeling feverish. Two weeks prior to admission hoarseness developed, followed in a few days by right anterior chest pain, which was aggravated by deep breathing and coughing. All the symptoms had continued to the time of admission.

The past history was noncontributory. The patient stated he had not had venereal disease or rheumatic fever. The family history was also unremarkable except that the patient's father had died of pulmonary tuberculosis.

Physical Examination.—The patient was dyspneic and cyanotic and appeared to be in considerable respiratory distress, complaining of severe pain in the lower right anterior portion of the chest. The temperature was 102.8 F, the pulse rate 96, and the respiratory rate 32 per minute. The blood pressure was 112/72. The mucous membranes of the nose and throat were injected. The neck was supple, the trachea was in the midline, and the neck veins were not distended. There were no palpable lymph nodes. There were no petechiae or other cutaneous eruptions. Dulness was noted over the upper two-thirds of the right side of the chest anteriorly and in the right axilla. The breath sounds were diminished anteriorly but were bronchial in quality high in the right axilla. Many crepitant rales and a friction rub were were heard in the axillary area. The heart was not enlarged to percussion. The point of maximal impulse was in the fifth intercostal space at the midclavicular line. A regular sinus rhythm of rapid rate prevailed and the heart sounds were of good quality. There was a short, localized, low-pitched systolic murmur at the apex. No murmurs were heard over the aortic region. The aortic second sound was equal to the pulmonic second sound. The liver was 2 fingerbreadths below the right costal margin. The spleen and kidneys were not palpable. The remainder of the examination was not significant. A diagnosis of pneumonia was made.

Laboratory Examination.—The red blood cell count was 3,900,000, with 13 gm. of hemoglobin, and the white blood cell count was 12,200, with 84% polymorphonuclear cells, of which 12% were immature, 14% monocytes and 2% basophils. The only abnormal urine findings were albumin (2+) and rare hyaline casts in the sediment. The sputum was copious and purulent but nonfoul and grew D. pneumoniae, type 2, on culture. The blood culture was also positive for D. pneumoniae, type 2. The Wassermann reaction was negative. The nonprotein nitrogen was 20 mg. per 100 cc. An electrocardiogram indicated normal heart function. A roentgenogram of the chest showed a pneumonic process involving the major portion of the right lung, but no cardiac enlargement.

Treatment and Course.—On admission, therapy with bacitracin (under investigation at the time) was instituted. The patient received 33,000 units of this antibiotic intramuscularly every six hours. Some improvement was noted at first. When, however, the temperature rose to 103 F, on the fourth hospital day, the dose of bacitracin was increased to 66,000 units every six hours. Clinical improvement was noted during the following week, with progressive clearing of the pneumonic process.

Although there was little evidence of pneumonia during the succeeding week, the patient continued to have a septic type of temperature. Repeated blood cultures were positive for D. pneumoniae, type 2. Accordingly, on the 17th day the dose of bacitracin was increased to 98,000 units every four hours.

Examination on the 20th day revealed for the first time a systolic murmur at the aortic area and a low-pitched, soft, diastolic murmur at Erb's point. The diastolic murmur was transmitted to the apex. At this time a diagnosis of endocarditis was entertained. Bacitracin therapy was therefore discontinued and aqueous penicillin therapy instituted in a dose of 200,000 units every four hours. The temperature dropped to lower levels subsequently but never became normal.

On the 22nd day the lungs appeared to be entirely clear. The cardiac murmurs persisted, and the blood pressure was 100/40. The penicillin dose was then increased to 500,000 units every two hours and, in order to obtain high levels, carinamide was added. About this time it was noted that the patient's hemoglobin had dropped to 7.9 gm. The blood culture was then sterile.

During the succeeding few days the patient continued to have a low-grade fever but was otherwise asymptomatic. However, the cardiac murmurs persisted and the heart was considerably enlarged to the left.

When, on the 29th day, the patient was permitted out of bed, he immediately became very dyspneic and cyanotic. Bed rest was reinstituted at once. From that time on, the patient's condition deteriorated rapidly. There were signs of diffuse pulmonary edema and of severe congestive heart failure. Therapeutic efforts were of no avail. On the 31st day the patient lapsed into a stupor and died.

Postmortem Findings.—The apex of the upper lobe of the right lung was crepitant, while much of the remaining portions of the right lung was consolidated. A large amount of pink frothy fluid was seen in all bronchi of both lungs. There was thickening of the pleura over the right lung. The heart weighed 430 gm. The right coronary leaflet was almost completely destroyed by a large ulcerative vegetation. A perforation, measuring 3 mm. in diameter, was located near its ventricular border. A large vegetation occupied the left coronary leaflet. The left ventricle and the aortic ring were somewhat dilated. The wall of the left ventricle was 16 mm. thick and that of the right ventricle 2 mm. The right kidney weighed 210 gm. and the left 200 gm.

Microscopic examination of sections from the middle lobe of the right lung revealed the presence of fibrin, mononuclear phagocytes, and polymorphonuclear leukocytes in many lobules and bronchi. There were also many "heart failure" cells and some edema fluid. The individual myocardial fibers were hypertrophied. The aortic cusps were heavily infiltrated with mononuclear and polymorphonuclear leukocytes, accompanied by a proliferation of vascular components and young fibroblasts. The distal portion of the right coronary cusp was almost completely destroyed. Sections of the kidneys showed necrosis of the tubular epithelium and infiltration of some of the glomeruli and connective tissue with polymorphonuclear leukocytes.

Final Anatomic Diagnosis.—The final diagnosis included: pneumonia in the middle and lower lobes of the right lung; acute bacterial endocarditis in the aortic valve, with perforation of the right coronary cusp; hypertrophy and dilatation of the heart; and toxic nephrosis.

Comment.—On admission the patient presented pneumococcic pneumonia and bacteremia probably of three weeks' duration. Although a short apical systolic murmur was present, there was no cardiac enlargement or evidence of aortic valvulitis at the time. It was not until the 20th hospital day that the murmurs over the aortic area were detected and a diagnosis of endocarditis entertained. Whether the initial phase of the endocardial infection was already present at the time of admission is a matter of speculation. However, the persistently positive blood cultures would seem to favor that supposition. With regard to the size of the heart, it is important to note that significant cardiac enlargement developed in about three weeks following the establishment of aortic regurgitation as a result of destruction of both posterior cusps.

The use of bacitracin appeared to be beneficial against the pneumonia but did not seem to influence favorably either the bacteremia or the endocarditis. The intensive penicillin therapy, which was obviously started too late, did result in sterilization of the blood stream and in partial healing of the endocardial infection.

While nephrotoxic changes may complicate acute endocarditis and bacteremia, it is well to bear in mind that renal damage may result from the use of bacitracin. The nephrotoxicity of bacitracin has been the subject of considerable study by several investigators.[1] It is very likely that both the severe infection and the bacitracin contributed to the kidney damage.

CASE 4.—*History.*—R. L., a man aged 22, was admitted to the ychiatric division of Bellevue Hospital on May 24, 1947, be-use of confusion, violence, and disorientation of three days' duration. The patient was a native of the Belgian Congo and had been in the United States less than one year. A distinct language barrier, combined with his poor mental state, made it impossible to obtain an adequate history.

Physical Examination.—The patient was completely disoriented and so violent that restraints were necessary. He was able to lie flat without obvious respiratory distress but perspired profusely. The temperature was 102 F, the pulse rate was 100, and the respirations were 24 per minute. The pupils were round, regular, and equal and reacted to light. The scleras were nonicteric, and no petechiae were present. The fundi were normal. The posterior pharynx appeared injected. The neck was supple, the trachea was in the midline, and the thyroid was not palpable. There was dulness to percussion at the base of the right lung, posteriorly in the axilla, and anteriorly below the third rib. The breath sounds over this area were distant and bronchovesicular in quality. Numerous fine inspiratory rales were heard, but there was no friction rub. The base of the left lung revealed flatness to percussion, absent breath sounds, but no rales. The heart appeared normal in size, with the point of maximal impulse palpable in the fifth intercostal space, inside the midclavicular line. Sinus tachycardia was present. Loud systolic and diastolic murmurs were heard at the base. The systolic murmur was transmitted to the neck, while the diastolic could be followed to Erb's point and to the apex. The aortic second sound was accentuated and greater than the pulmonic second sound. No thrills were palpable. The blood pressure was 120/40. Examination of the abdomen disclosed no abnormalities. The radial pulsations were Corrigan in quality. The results of the neurological examination were entirely negative. The clinical diagnosis was pneumonia and syphilitic heart disease.

Laboratory Examination.—The red blood cell count wa 4,800,000, the hemoglobin was 13 gm., and the white blood cel count was 17,200, with 88% polymorphonuclears, of which 12% were immature, 10% lymphocytes, and 2% monocytes. Th urine was normal. The blood Wassermann and Mazzini reaction were both 4+. The blood culture was positive for Staphylococcu aureus. A roentgenogram of the chest revealed bronchopneu monic changes throughout the right lung. There was a sma pleural effusion on the left side. An electrocardiogram indicate normal function except for sinus tachycardia. A spinal tap re vealed an initial pressure of 100 mm. of water, with no evidenc of subarachnoid block. The fluid was clear and showed eigl mononuclear cells per cubic millimeter, a protein level of 4 sugar level of 107, and chloride value of 725 mg. per 100 c The spinal fluid Wassermann reaction was negative, and tl colloidal gold curve was 002211000.

Treatment and Course.—Treatment on the day of admissic was entirely symptomatic. On the second day the patient w dyspneic, very toxic, and completely incoherent. The physic findings were essentially unchanged, except that the spleen b came palpable. The temperature rose to 105.4 F. On this day tl patient received 100,000 units of penicillin intravenously eve eight hours.

During the succeeding two days the patient's condition dete orated rapidly. In addition to the evidences of sepsis, there we signs of congestive heart failure. On repeated culture the blo remained positive for Staph. aureus. No specific medication w given on the third day, but on the fourth day the patient w given 50,000 units of penicillin intramuscularly every three hou and, in addition, 2 gm. of sulfadiazine intravenously. The patie died the same day.

Postmortem Examination.—Considerable quantities of eder fluid were present in both lungs. There was lobular consolidati of the lower lobe of the right lung. The right pleural cavity w completely obliterated by dense fibrous adhesions. The l pleural space contained 800 cc. of clear yellow-brown fluid. T heart weighed 350 gm. The right coronary and noncorona cusps of the aortic valve were extensively deformed and h many small marginal vegetations. The ventricular surface of t cusps was ulcerated. The left ventricular myocardium was mm. thick and the right, 4 mm. The aorta was normal.

Microscopic examination of sections from various portions the lungs revealed edema and congestion with numerous "hea failure" cells. In other sections there were collections of r blood cell remnants, with fibrin and polymorphonuclear leuk cytes in some of the alveoli and bronchioles. Examination of t heart sections revealed areas of focal fibrosis and emboli in se eral of the small blood vessels. The endocardium over the vent cular surface of the aortic cusps was thickened and was replac in two areas by a mass of fibrin in which were enmeshed ma polymorphonuclear cells and red blood cells. This material pen trated into the myocardium.

Final Anatomic Diagnosis.—The final diagnosis included lol lar pneumonia of the right lung; fibrous pleural adhesions; ac vegetative and ulcerative endocarditis in the aortic valve; co gestion and edema of the lungs; and left pleural effusion.

Comment.—On admission this patient presented sig of pneumonia and of aortic regurgitation. There was history available to shed light on the present illness or a antecedent disease. While the presence of staphylococ bacteremia was definitely established by the positi blood cultures, the source of the sepsis could not learly demonstrated. Nor could it be determined wheth the pneumonia was primary or secondary.

In view of the positive results of serologic examinatic it is not surprising that the aortic insufficiency was garded clinically as being of syphilitic origin. However, as shown at necropsy, there was no syphilitic aortitis, but an acute valvular infection with many vegetations and extensive ulceration and deformity of the right coronary and the noncoronary cusps, which undoubtedly produced the aortic incompetence. It would seem that the duration of the endocarditis was too short to bring about a significant change in the size of the heart. The pathological findings in this case serve to emphasize the importance of bearing in mind the possibility of endocarditis whenever heart murmurs are associated with a positive blood culture.

---

[1] (*a*) Meleney, F. L.; Longacre, A. B.; Altemeier, W. A.; Reisner, E. H., Jr.; Pulaski, E. J., and Zintel, H. A.: The Efficacy and the Safety of the Intramuscular Administration of Bacitracin in Various Types of Surgical and Certain Medical Infections, with Analysis of 270 Cases, Surg., Gynec. & Obst. **89**: 657, 1949. (*b*) Meleney, F. L., and Johnson, B. A.: Bacitracin, Conn. M. J. **14**: 305, 1950. (*c*) Miller, J. H.; McDonald, R. K., and Shock, N. W.: The Effect of Bacitracin on Renal Function, J. Clin. Invest. **29**: 389, 1950. (*d*) Reisner, E. H., Jr.; Bailey, F., and Appelbaum, E.: The Treatment of Lobar Pneumonia with Bacitracin, Ann. Int. Med. **34**: 1232, 1951.

The clinical course from the time of admission was too short and too severe to permit a proper evaluation of the efficacy of the treatment. However, it must be admitted that the penicillin therapy was totally inadequate. Whether an intensive course of antibiotic therapy would have resulted in a successful outcome is entirely conjectural.

COMMENT

It is clear from this study that acute endocarditis as a complication of bacterial pneumonia often escapes recognition. In Case 1 the presence of valvular heart disease was first noted on the 19th day of hospitalization. However, the true nature of the lesion was not recognized at the time. In Case 2 signs of aortic regurgitation appeared on the 5th hospital day, at which time the possible development of acute endocarditis was suspected but not entertained seriously. The possibility of an endocardial infection in Case 3 was mentioned for the first time on the 20th hospital day. Although the presence of aortic regurgitation was noted on admission in Case 4, the clinical diagnosis was syphilitic heart disease, largely because of the positive serologic reactions.

From this small group of cases it is difficult to determine the time of onset of the endocarditis. According to Thayer [2] the endocardial infection generally comes on late in the course of, or a few days after, the apparent termination of pneumonia. While this belief would appear to receive confirmation from Cases 1 and 3 in our group, it is conceivable that in both instances the endocardial complication may have been overlooked earlier in the course of the pneumonia. It is also important to note that in Cases 2 and 4 endocardial involvement was manifested early. It is our impression that the inception of the endocardial infection is in the early phase of the pneumonia, probably at the height of the bacteremia.

Since the early recognition of an endocardial lesion during the course of pneumonia is frequently difficult, it is necessary to emphasize the essential criteria for the diagnosis of this complication. These include the development of an endocardial murmur or murmurs, particularly if the murmurs are diastolic, evidence of impaired myocardial function, changes in the size and contour of the heart demonstrated by roentgenograms, the presence of embolic phenomena, persistence or recurrence of fever in spite of improvement in the primary disease, and persistence of positive blood cultures. However, the absence of embolic phenomena should not militate against the diagnosis of endocarditis. The use of antibiotics may interfere with the results of the blood culture. In cases in which penicillin is administered, the addition of penicillinase to the culture may inhibit the effect of this antibiotic. It is, of course, of the utmost importance to bear in mind the possible development of endocarditis during the course of pneumonia.

In this study we were impressed particularly with the fact that in each of the four cases the endocardial infection involved the aortic valve and was associated with a dynamic aortic regurgitation. The development of a severe degree of heart failure was, of course, attributable to the rapidly progressing aortic incompetence. This factor was responsible also for the early changes in the contour and size of the heart noted in three of the cases. It is noteworthy that a similar situation occurs frequently in penicillin-treated patients with subacute bacterial endocarditis. The role of aortic regurgitation in the early development of heart failure in those cases has been emphasized by Honigman and Karns,[3] Kaplan and co-workers,[4] and others.

With regard to the pathogenesis of the aortic regurgitation, it may be noted that in three of our cases the involved cusps were either ulcerated or perforated, while in the fourth case regurgitation developed as a result of valvular deformity, part of which appeared to be of an antecedent nature. This seems to indicate that, in acute endocarditis, destructive valve lesions are usually, though not invariably, responsible for the development of aortic regurgitation. By contrast, in penicillin-treated patients with subacute bacterial endocarditis, the aortic insufficiency is usually produced or markedly aggravated by valvular distortion, much of which is due to the healing process. This has been emphasized by Carnes and Tinsley,[5] Honigman and Karns,[3] Fiese,[6] and Kaplan [4] and his collaborators. In three of our cases in which evidence of partial healing was present, it was difficult to determine to what extent the reparative process had contributed to the valvular incompetence. Attention must also be directed to the fact that healing was not complete in any of our cases.

Since it is apparent that in acute endocarditis aortic valvular dysfunction associated with the development of progressive heart failure is usually a direct result of early cusp destruction, the prompt control of the endocardial infection becomes a matter of greatest urgency. As mentioned previously, it is extremely important to bear in mind the possibility of endocarditis as a complication during the course of pneumonia. If the presence of an endocardial infection is suspected, a vigorous program of antibiotic therapy must be instituted at once in order to minimize the destructive process. It is necessary also to continue the intensive treatment for a relatively long period, probably a minimum of six weeks. As was noted in our cases, inadequate therapy may be repressive but not curative. There is also the additional hazard that insufficient antibiotic treatment may lead to the development of drug resistance. It is hoped that attention to these details may lead to better clinical results in the treatment of endocarditis as a complication of bacterial pneumonia.

---

[2] Thayer, W. S.: Studies on Bacterial (Infective) Endocarditis, Baltimore, Johns Hopkins Press, 1926.

[3] Honigman, A. H., and Karns, J. R.: Healed Subacute Bacterial Endocarditis: A Report of 2 Cases with Death Due to Congestive Heart Failure, Ann. Int. Med. 26: 704, 1947.

[4] Kaplan, S. R.; Rosenman, R. H.; Katz, L. N., and Brams, W. A.: Healed Subacute Bacterial Endocarditis, a New Entity, J. A. M. A. 141: 114 (Sept. 10) 1949.

[5] Carnes, W. H., and Tinsley, C. M.: The Pathological Results in Cases of Bacterial Endocarditis Treated with Penicillin, Stanford M. Bull. 4: 78, 1946.

[6] Fiese, M. J.: Cardiac Failure in Penicillin-Treated Subacute Bacterial Endocarditis, Arch. Int. Med. 79: 436 (April) 1947.

SUMMARY

Four cases of bacterial pneumonia complicated by acute endocarditis are described. The diagnostic criteria of the endocardial complication, which frequently escapes clinical recognition, are emphasized. Particular attention is directed to the nature of the valvular lesion, a dynamic aortic regurgitation, which is usually the result of early valve destruction. The hazards of inadequate antibiotic treatment are noted. The importance of early diagnosis of the endocardial infection and of prompt institution of vigorous antibiotic therapy is stressed.

910 Park Ave. (Dr. Appelbaum).

TREATMENT OF SUBACUTE BACTERIAL ENDOCARDITIS WITH AUREOMYCIN

Charles K. Friedberg, M.D., New York

Although penicillin is effective in most cases of subacute bacterial endocarditis, there is need for an antibiotic which is potent when orally administered and which possesses a wider antibacterial range. Because aureomycin appears to have these two attributes, it was utilized in a series of cases of subacute bacterial endocarditis.

Aureomycin given orally has proved to be effective not only against virtually all the varieties of bacteria which are sensitive to penicillin but also against many penicillin-resistant organisms, notably the gram-negative bacilli and penicillin-resistant staphylococci. However, the value of aureomycin in the treatment of subacute bacterial endocarditis due to nonhemolytic streptococci has not been assessed in any significant number of cases. Isolated instances of recovery or failure following aureomycin erapy have been mentioned in various studies of aureocin.[1] In particular, aureomycin has cured some pants with acute Staphylococcus endocarditis, in whom he Staphylococcus was highly resistant to penicillin.[2] In this report we are concerned with cases of subacute bacterial endocarditis which are caused by nonhemolytic streptococci.

Aureomycin was administered to 11 patients with subacute bacterial endocarditis.[3] A positive blood culture was obtained on at least two occasions in 8 of the 11 patients. In the other 3 patients the diagnosis appeared highly probable on the basis of clinical data. Numerous blood cultures had been negative in each of these. All the patients, with and without positive blood cultures, had rheumatic cardiovalvular disease and unexplained fever for two and one-half weeks to three months or longer.

In all cases therapy was begun with aureomycin by mouth. At least 4 gm. and preferably 6 gm. was administered daily in divided doses at six-hour intervals, but the schedule was often modified to smaller doses at four or three-hour intervals. Aureomycin was continued for five to eight weeks if there was a satisfactory clinical response. If, however, fever persisted or recurred, or if blood cultures remained or became positive, aureomycin was discontinued and penicillin or other antibiotic therapy was instituted.

REPORT OF CASES

CASE 1.—A man aged 31 had suffered from fever for six weeks, an attack of sharp pain in the left upper quadrant of the abdomen, and painful spots on the fourth and fifth fingers of his right hand. Aureomycin administered for 10 days was said to have been ineffective. There was a history of rheumatic fever and cardiac murmurs.

Examination disclosed fever up to 102 F, signs of aortic stenosis and insufficiency and mitral valvular disease, splenomegaly, and white-centered petechiae in the conjunctivae. Blood cultures were positive for Streptococcus viridans, sensitive to 0.03 unit of penicillin per milliliter and to 1 γ per milliliter of aureomycin. Aureomycin was given in 1 gm. doses every six hours (Fig. 1). The temperature fell promptly to normal, but because the blood concentration of aureomycin was only 2 γ per milliliter the dose was increased to 6 gm. daily. Blood concentrations of aureomycin increased to 6.6 γ per milliliter five and three-quarters hours after the previous dose. Aureomycin was continued for a total of six weeks. The temperature remained normal, and repeated blood cultures were negative. Six weeks later the patient suffered a cerebral embolism, but there was no fever and blood cultures remained negative. Except for the residuals of a hemiparesis, he has been well for 10 months.

CASE 2.—A woman aged 26 had suffered rheumatic fever and carditis between April and August, 1945. In July, 1947, she had subacute bacterial endocarditis and was treated with 1,600,000 units of penicillin daily for five weeks. Two weeks later she had a therapeutic abortion, and a few weeks thereafter there was a recurrence of bacterial endocarditis, complicated by subarachnoid hemorrhage and cerebral embolism with aphasia and hemiparesis. This was interpreted as a relapse rather than a recurrent attack. Recovery followed seven weeks of penicillin therapy. In July, 1949, following childbirth, culture of the blood was positive for Streptococcus viridans and penicillin was given for six weeks for the second attack of subacute bacterial endocarditis. However, the patient relapsed in November, 1949, and was retreated with penicillin and streptomycin for five weeks. Fever and associated symptoms recurred in December, 1949, and she was admitted to the Mount Sinai hospital in January, 1950.

Examination disclosed fever, signs of mitral stenosis and aortic insufficiency, an Osler node, enlarged spleen, and a hemoglobin value of 11.5 gm. per 100 ml. Blood cultures were positive for Streptococcus viridans, sensitive to 0.02 unit of penicillin per milliliter and to less than 0.2 γ per milliliter of aureomycin; i. e., extremely sensitive to both antibiotics. She was given 3 gm. daily of aureomycin by mouth, and later 2 gm. daily. The temperature promptly returned to normal, and subsequent blood cultures were negative. Blood levels ranged be-

---

From the medical services of the Mount Sinai Hospital.

[1] Brainerd, H.; Lennette, E. H.; Meicklejohn, G.; Bruyn, H. B., Jr., and Clark, W. H.: Symposium on Antibiotics: The Clinical Evaluation of Aureomycin, J. Clin. Investigation 28: 992, 1949. Harvey, J. C.; Mirick, G. S., and Schaub, I. G.: Clinical Experience with Aureomycin, J. Clin. Investigation 28: 987, 1949. Hughes, S. O.: Subacute Bacterial Endocarditis Successfully Treated with Aureomycin, Am. J. Med. 10: 402, 1951.

[2] Levinson, D. C.; Griffith, G. C., and Pearson, H. E.: Increasing Bacterial Resistance to the Antibiotics, Circulation 2: 668, 1950.

[3] Aureomycin was supplied by the Lederle Laboratories, Division of the American Cyanamide Co., Pearl River, N. Y., through the assistance of Dr. J. M. Ruegsegger.

tween 4 and 8 γ of aureomycin just before each new dose. This was 20 to 40 times the bacteriostatic concentration in vitro. Therapy was continued for eight weeks. The patient recovered, and there has been no relapse or recurrence for 14 months.

Case 3.—A man aged 39 was admitted because of fever for four weeks and shaking chills for two days. There were signs of aortic insufficiency. Blood cultures yielded a growth of Streptococcus viridans, sensitive to 0.8 γ of aureomycin per milliliter. Following therapy of 3 gm. daily of aureomycin, the patient felt well and blood cultures were negative. After three weeks of treatment the dose was reduced to 1 gm. daily. A positive blood culture was obtained, and the dose was again increased to 3 gm. daily and continued for five weeks. Blood cultures remained negative and the temperature normal throughout this period.

He was readmitted six weeks after completing this course of treatment. One month prior to this second hospital admission a tooth was extracted. He received 300,000 units of penicillin daily for two days before and three days after the extraction. However, fever, headache, weakness, and generalized aches recurred and blood cultures were again positive for Streptococcus viridans. Splenomegaly and white-centered petechiae were present. Recovery followed retreatment with 1,300,000 units of penicillin daily for five weeks. He has remained well for one year.

Case 4.—A boy aged 15 had suffered rheumatic fever in 1946 followed by cardiac murmurs. Heart failure appeared six months before admission. Fever was discovered two weeks before admission and two weeks following a dental extraction.

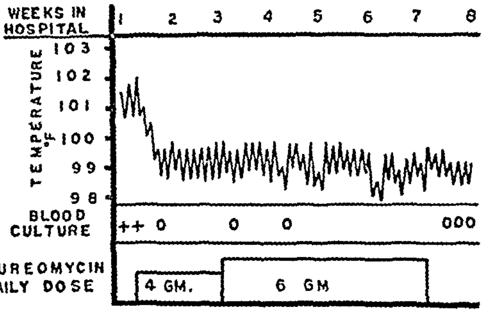


Fig. 1 (case 1).—Recovery following six weeks of treatment with aureomycin by mouth.

Examination disclosed fever, signs of aortic insufficiency and stenosis and of mitral valvular disease, splenomegaly, and evidence of heart failure. The hemoglobin was 8.7 gm. per 100 ml. Blood cultures were positive for Streptococcus viridans, sensitive to 0.4 γ of aureomycin.

Four grams of aureomycin was given daily, and the temperature gradually fell to normal in four days (Fig. 2). Blood concentration of aureomycin was 3.3 γ per milliliter. After 12 days of therapy, fever recurred as well as showers of petechiae, tenderness, and enlargement of the spleen. The patient suffered from intense nausea and vomiting, and there was considerable uncertainty that he was taking or retaining the prescribed dosage. Aureomycin was discontinued, and 2,400,000 units of penicillin daily was given for five weeks. A rapid recovery was effected and the patient has remained well for 10 months.

Case 6.—A man aged 49 had experienced fever for three months, with weight loss, weakness, cough, and several episodes of pain in the left costovertebral region. There were signs of mitral and aortic valvular disease, white-centered petechiae, and splenomegaly. Blood cultures yielded an Enterococcus (Streptococcus fecalis), sensitive to 1.0 unit of penicillin per milliliter (50 times standard resistance) and to 0.6 unit of aureomycin per milliliter (3 times standard resistance). Aureomycin, 6 gm. daily, was administered for 10 days with a moderate reduction in temperature, but blood cultures remained positive (Fig. 3). After discontinuance of aureomycin, penicillin was given intramuscularly in doses of 24 million units for five weeks with excellent results. Recovery has persisted for 10 months.

Case 7.—A woman aged 28 had been treated at another hospital for subacute bacterial endocarditis due to an Enterococcus (Streptococcus fecalis) with prolonged courses of penicillin and of aureomycin without controlling the infection. After admission there were persistent fever and signs of mitral stenosis, and blood cultures were repeatedly positive for the Enterococcus (Streptococcus fecalis), sensitive to 2 to 4 units of penicillin per milliliter (100 times resistance of standard organisms), 2 γ of aureomycin per milliliter (10 times standard resistance), and 1 γ of chloramphenicol (chloromycetin®) per milliliter (2 times the resistance of standard organism).

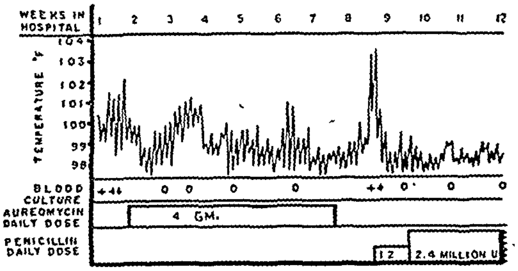


Fig. 2 (case 4).—Negative cultures, but persistent spikes of fever during aureomycin therapy. Relapse one week after completing six weeks of oral aureomycin therapy. Subsequent cure with penicillin intramuscularly administered for five weeks.

Six grams of aureomycin was given daily, and the temperature fell gradually to below 100 F, but spiked to 101 F with a positive blood culture on the fifth day of treatment. When fever persisted after 10 days of treatment, despite a negative blood culture on that day, chloramphenicol therapy was substituted. The temperature fell to normal, and blood cultures were negative. After four weeks of treatment, the patient became psychotic and had to be transferred to a city hospital, where chloramphenicol therapy was continued for four more weeks. However, shortly after the therapy was discontinued, fever and positive blood cultures recurred. The patient was well and blood cultures were sterile during eight subsequent weeks of terramycin therapy, 12 to 15 gm. daily by mouth, but there was a relapse as soon as the drug was discontinued. Finally, relatively small average doses of aureomycin, terramycin, chloramphenicol, gantrisin® (3,4-dimethyl-5-sulfanilamido-isoxazole), streptomycin, and penicillin were given simultaneously for six weeks. The patient has remained well one year since this treatment ended.

Case 10.—A man aged 37 had had anemia for several months, anorexia and weight loss, night sweats, dyspnea, weakness, and a fever of around 101 F. There were signs of aortic and mitral insufficiency and stenosis, white-centered petechiae, Osler nodes, splenomegaly, anemia, and microscopic hematuria. Numerous blood cultures, including arterial, and bone marrow cultures were negative. Aureomycin, 3 to 4 gm. daily, was administered for seven and one-half weeks with recovery. The patient has remained well for 16 months.

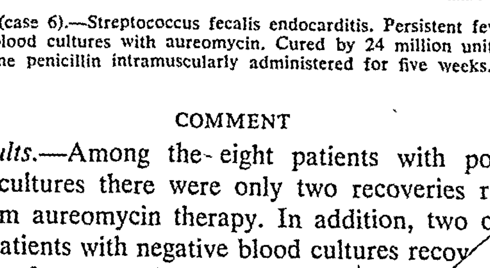


Fig. 3 (case 6).—Streptococcus fecalis endocarditis. Persistent fever and positive blood cultures with aureomycin. Cured by 24 million units daily of procaine penicillin intramuscularly administered for five weeks.

COMMENT

Results.—Among the eight patients with positive blood cultures there were only two recoveries resulting from aureomycin therapy. In addition, two of tl three patients with negative blood cultures recov s a result of aureomycin therapy, making a tot recoveries resulting from aureomycin therapy among 11 patients, or 44% (Table). Five of the six patients with positive blood cultures who were not cured by aureomycin subsequently recovered, four as a result of penicillin therapy and one as a result of a combination of gantrisin® and five antibiotics. Thus 7 of the 8 patients with positive blood cultures and 9 of 11 in the total series recovered. Of the four patients in whom recovery could be credited to aureomycin, in three penicillin given alone or in combination had failed to effect a cure. However, in only two of these were the positive blood cultures proved to be caused by a nonhemolytic Streptococcus. Conversely, in 5 patients with positive blood cultures, penicillin alone or combined with other antibiotics cured the patient after aureomycin had failed.

Results of Aureomycin Treatment in Eleven Patients with Subacute Bacterial Endocarditis

					Sensitivity		Aureomycin Therapy			
Case No.	Age	Sex	Rheumatic Valve Lesion	Causative Organism	Aureomycin γ/Ml.	Penicillin Units/Ml.	Daily Dose Gm.	Duration Weeks	Response	Subsequent Course
1	31	M	Mitral and aortic	Streptococcus viridans	1.0	0.03	4 6 (Occasionally less)	1½ 4½	Recovery	Cerebral embolism; no fever; negative blood culture
2	26	F	Mitral and aortic	Streptococcus viridans	< 0.2	0.02	3 2	1 7	Recovery	....
3	39	M	Aortic	Streptococcus viridans	0.8	0.03	2-4	8	Controlled but relapsed	Recovery with penicillin
4	15	M	Mitral and aortic	Streptococcus viridans	0.4	0.04	4	6	Controlled but relapsed	Recovery with penicillin 2,400,000 units—5 weeks
5	40	M	Mitral	Streptococcus viridans	0.6	0.03-0.05	4	3	Temporary apyrexia	Recovery with penicillin 2,400,000 units—6 weeks
6	59	M	Mitral and aortic	Enterococcus (Str. fecalis)	0.6	1.0	6	1½	Failed	Recovery with penicillin 24 million units—5 week
7	28	F	Mitral	Enterococcus (Str. fecalis)	0.4-2.0	2.0-4.0	6	1½	Failed	Recovery with combined antibiotics
8	63	M	Mitral and aortic	Streptococcus viridans	0.2-0.4	0.05-0.3	2-4	8	Controlled but relapsed	Death from heart failure postmortem healing a active bacterial endocarditis; bacteria present
9	41	M	Mitral	Not recovered	...	....	4	6	Recovery	....
10	37	M	Mitral and aortic	Not recovered	...	....	3-4	7½	Recovery	....
11	49	M	Mitral and aortic	Not recovered	...	....	2-6	(Multiple courses) 4-6	Controlled on aureomycin; relapse when discontinued	Died, heart failure after 7 mo.

Of the six patients with positive blood cultures who were not cured by aureomycin, three had a satisfactory clinical and bacteriologic response during aureomycin therapy and the course of treatment was continued for a full five to eight weeks. Relapse, characterized by fever and a positive blood culture, occurred usually within three to seven days.

In the other three patients aureomycin therapy was interrupted after 10 to 21 days because of an unsatisfactory response. In one of these, blood cultures became negative but the temperature did not quite fall to normal and then mounted gradually. Because the patient was complaining of intense nausea, vomiting, and diarrhea, and because of the imperfect response, penicillin was substituted, with prompt clinical improvement and eventual recovery. In the other two patients, both with Streptococcus fecalis endocarditis, aureomycin failed either to sterilize the blood or to dissipate the fever, and other antibiotics were substituted after 10 and 11 days respectively. These two patients also recovered.

Causative Organisms, Sensitivity, and Blood Levels.—The causative organism was an alpha Streptococcu (viridans) in six patients and Streptococcus fecali in two patients. In all instances the isolated organis was relatively sensitive to moderate doses of aureomycin the sensitivity ranging usually between 0.2 and 1.0 γ pe milliliter. The standard test organism Bacillis No. 5 (B cereus) is sensitive to 0.2 γ per milliliter. Serum aure mycin levels five to six hours after a dose of aureomyci usually ranged between 2 and 6 γ per milliliter. This wa almost always more than 5 times, and usually more tha 10 times, the dose which inhibited growth of the causati organism in vitro.

Toxic Effects.—The only important side reactio were moderate to severe gastrointestinal disturbances, e pecially anorexia, nausea, and vomiting, and frequent diarrhea. These disturbances occurred to some exte after the first few days in every one of the 11 patients whom 4 gm. or more of the drug was given daily. A cordingly, in only one patient could a daily oral dose 6 gm. be maintained for more than four weeks. This p tient recovered with aureomycin alone. In four patients prescribed dose of 4 gm. daily had to be reduced inte mittently or continuously to 3 gm. or 2 gm. daily b mouth, or intravenous therapy was substituted because of the gastrointestinal symptoms. In two of these cases low blood levels of aureomycin suggested either that the patients had not actually swallowed the prescribed dose in dread of intense nausea, or they had not absorbed the drug because of vomiting and diarrhea.

Fatal Cases.—Two of the 11 patients treated with aureomycin died. One of these (Case 8) had received 1,200,000 to 8,800,000 units of penicillin with aluminum monostearate daily for three weeks, followed without interruption by four weeks of treatment with aqueous procaine penicillin, 2,400,000 units daily. During this period blood cultures were negative and the temperature was normal or almost normal. Nevertheless, the patient suffered a relapse within a month and again Streptococcus viridans was isolated, which was sensitive to aureomycin (0.4 γ per milliliter) as well as to penicillin (0.05 unit per milliliter). Four grams daily of aureomycin was given for two weeks, then 2 gm. daily for nine days, and then 3 gm. daily for five weeks. During aureomycin therapy blood cultures were negative and the patient was afebrile and asymptomatic except for mild congestive heart failure. There was a prompt relapse with discontinuation of the aureomycin therapy. Retreatment with 4,800,000 units daily of penicillin in combination with 4 gm. daily of aureomycin for two weeks, followed by 9,600,000 units of penicillin daily for four weeks again controlled the infection. However, the patient was soon readmitted for advanced congestive heart failure with auricular fibrillation and died within two days.

Postmortem examination revealed evidence not only of congestive heart failure but also of persistent active bacterial infection of the valvular endocardium and of the myocardium. Theoretically, adequate doses had been administered to control the infection, except that the doses of penicillin were not too generous at the beginning of treatment. Failure may be attributed to delay in diagnosis and treatment before the patient's first admission to the hospital. At least three months had elapsed before treatment was begun, and by this time both renal insufficiency and congestive heart failure were present. The deep-seated burrowing, destructive valvular lesion which had developed, protected by layers of fibrin and fibrinoid degenerated valve substance, was probably never accessible to adequate penetration by the antibiotics.

In the second fatal case (Case 11) the diagnosis of subacute bacterial endocarditis seemed highly probable on clinical grounds but was never definitely established by blood culture or postmortem examination. When 1,200,000 units daily of procaine penicillin had failed to control the infection, the patient was given 3 gm. of aureomycin daily with prompt restoration of normal temperature. Thereafter he was maintained on 2 to 3 gm. of aureomycin daily for eight weeks. But fever recurred on the third day after aureomycin was discontinued. At least four subsequent courses of aureomycin were given, each resulting in control of the infection during treatment, with early relapse after the drug was discontinued. After five months of treatment in the hospital, aureomycin therapy was continued for two and a half additional months after he returned home, during which time he felt well. He then interrupted treatment and two months later he was rehospitalized because of fever, pulmonary infarction (or pneumonia), and advanced congestive heart failure. The temperature fell to normal after three days of penicillin and aureomycin therapy and the heart failure appeared to be greatly improved, when death occurred suddenly and unexpectedly. A clinical diagnosis of massive pulmonary embolism was made, but postmortem examination was not permitted. Apparently, even prolonged control of the infection by aureomycin for five months or longer did not serve completely to eradicate the infection, which became reactivated each time the aureomycin was discontinued.

Cases with Cure.—The four cases in which aureomycin effected a cure were analyzed to determine what features could account for the successful outcome.

In Case 1, the patient was relatively young, aged 31. The onset of illness was six weeks prior to treatment, but aureomycin therapy had been given intermittently during this period. There was no evidence of heart failure, renal insufficiency, or embolic phenomena. The hemoglobin level was still well maintained. The causative organism was a Streptococcus viridans, inhibited in vitro by 1 γ per milliliter of aureomycin. Aureomycin therapy was continued for six weeks and the dosage maintained at 6 gm. daily for at least four weeks of this period and at 4 to 5 gm. daily for the other two weeks. High blood levels were attained, ranging frequently between 6 and 16 γ per milliliter five and three-quarter hours after the last dose. The favorable outcome may be attributed to the youth of the patient, the early initiation of treatment at a time when there were minimal clinical symptoms and signs, a dosage that was the highest in this series, and the relatively high blood concentrations of the drug. Failure occurred with causative organisms which were more sensitive to aureomycin than was the causative organism in this case.

A second recovery following aureomycin therapy (Case 2) also concerned a young patient, aged 26, who was free of heart failure or renal insufficiency. Aureomycin treatment was begun relatively early, within two to three weeks after a relapse following a five-week course of combined penicillin and streptomycin. The causative organism, a Streptococcus viridans inhibited by less than 0.1 γ of aureomycin, was the most sensitive isolated in this series. The dose of aureomycin was 3 gm. for a few days and then 2 gm. daily for a continuous period of four months. Thus of the two cured patients among the eight with positive blood cultures one patient had taken the highest daily dose for six weeks and the other had taken the drug for the longest uninterrupted period of time. Considering the extreme sensitivity of the causative organism in the latter case, the doses of drug taken yielded relatively high blood levels of 4 to 8 γ per milliliter, which was 20 to 40 times greater than the inhibiting concentration in vitro.

It is harder to analyze the two cases with recovery in which the causative organism was not isolated. However, it may be pertinent that both patients were free from heart failure, renal insufficiency, or gross emboli at the time treatment was begun.

Mechanism of Action of Aureomycin.—The rarity of spontaneous recovery, and the need for larger doses and more prolonged administration of penicillin in subacute bacterial endocarditis than in most other infections, suggested that the natural body defenses against bacterial endocarditis were poor and that cure of the disease depended almost entirely on the use of an exogenous bactericidal agent.[4] However, aureomycin, like the sulfonamides and unlike penicillin, exerts primarily a bacteriostatic and not a bactericidal effect. While multiplication of the nonhemolytic streptococci may be prevented by moderate doses of aureomycin, *viable organisms persist* and resume their growth and multiplication as [illegible]

Dr. Robert [illegible] Library
[illegible] Medical [illegible]

---

[4] Hunter, T. H.: Speculations on the Mechanism of Cure
144:524 (Oct. 14) 1950.

as they are removed to fresh media without aureomycin. Accordingly, in the cases here reported, aureomycin often succeeded in the prompt elimination of fever and sterilization of the blood stream. Nevertheless, despite the absence of fever and despite negative blood cultures for as long as eight weeks, persistence of clinical improvement and recovery were observed only in a minority of cases. In one case clinical and bacteriologic relapse occurred each time aureomycin was withheld even after five courses of the drug for periods of three to five weeks each. These observations suggest that the causative micro-organisms were merely inhibited and not destroyed during the period of therapy and that even prolonged bacteriostasis does not permit the body to effect a cure.

Failure of aureomycin could not be explained by in vitro resistance of the causative organism to the antibiotic. In six of the eight cases in which sensitivity was determined, the causative micro-organism was inhibited by less than 1 γ per milliliter of aureomycin. In the other two cases occasional determinations showed sensitivities as high as 2γ and 10 γ per milliliter, respectively. On the usual dose of 1 gm. of aureomycin every six hours, blood concentrations of 2 to 5 γ per liter were present five to six hours after a given dose. While in almost all cases these concentrations exceeded the in vitro sensitivities of the causative organisms, they did not regularly reach levels 5 to 10 times the in vitro sensitivity, as is generally desirable in treating such patients with penicillin. Possibly these higher levels represent concentrations of penicillin which are bactericidal while the in vitro sensitivities which we reported indicate the bacteriostatic concentration, i. e., the concentration which inhibits growth and multiplication. However, in one infection (Case 6), due o Streptococcus fecalis sensitive to 0.6 γ of aureomycin - milliliter, 6 gm. daily of the drug was ineffective, although blood aureomycin concentrations were attained which were at least nine times the sensitivity of the causative organism. More valuable information for treatment of subacute bacterial endocarditis might be available if the in vitro bactericidal concentration of antibiotics for the causative micro-organism was determined instead of the bacteriostatic (inhibition) concentration.

The mechanism of cure in subacute bacterial endocarditis is particularly obscure in one patient with endocarditis due to the Streptococcus fecalis (Case 7). She failed to respond to large doses of penicillin and to aureomycin and relapsed promptly after clinical and bacteriologic arrest during chloramphenicol therapy. Although the causative organism was especially sensitive to terramycin, huge doses (12 to 15 gm. daily) of this drug were given for eight weeks, during which time fever was absent and blood cultures were negative. Yet there was a prompt relapse after the antibiotic was discontinued. These observations indicate that chloramphenicol and terramycin, like aureomycin, are usually bacteriostatic and not bactericidal in the treatment of nonhemolytic streptococcal endocarditis. Furthermore, the experience with unusually large doses of terramycin suggests that the drug is bacteriostatic even in these high doses and that a bacteriostatic drug may be ineffective in the treatment of subacute bacterial endocarditis even when administered for a long time. Finally, this patient was cured by moderate doses of six antibiotics in combination, namely aureomycin, terramycin, chloramphenicol, penicillin, streptomycin, and gantrisin,® none of which were effective when given alone in much larger dosage. While this type of shotgun therapy is not recommended as a frequent procedure, its use as a measure of desperation and its successful result are worthy of note.

CONCLUSIONS

Aureomycin, administered orally in doses of 3 to 6 gm. daily, was much less effective than intramuscularly administered penicillin in the treatment of subacute bacterial endocarditis due to nonhemolytic streptococci. Penicillin administered intramuscularly or intravenously remains the drug of choice in the treatment of this disease. The desire for an equally effective or superior oral medicament for this purpose remains unfulfilled.

On the other hand, the recovery of two patients with aureomycin therapy alone after penicillin had failed signifies that aureomycin may serve as a useful therapeutic supplement. In vitro studies [5] suggest that aureomycin may also be useful when combined with penicillin in the treatment of some cases of subacute bacterial endocarditis. When the causative organism in cases of subacute bacterial endocarditis is resistant to penicillin or to aureomycin alone, its sensitivity to this and other combinations should be determined in vitro, and that combination employed which is most likely to effect a cure.

Aureomycin should also be considered for use in cases of bacterial endocarditis caused by other penicillin-resistant micro-organisms than nonhemolytic streptococci. The increasing number of strains of staphylococci which have been found resistant to penicillin,[6] but usually sensitive to aureomycin, indicates that aureomycin is a potent drug in the treatment of staphylococcic endocarditis [7] as well as other staphylococcic infections. Aureomycin may also be indicated as the primary choice in the treatment of those occasional cases of bacterial endocarditis caused by gram-negative bacilli. Cases of Escherichia coli endocarditis have invariably ended fatally.[8] Aureomycin is effective in the treatment of many strains of Esch. coli and should be given a therapeutic trial in future cases of endocarditis due to this organism. Aureomycin may prove to be preferable to streptomycin in the treatment of endocarditis due to Hemophilus parainfluenzæ or H. influenzæ. The combination of aureomycin with dihydrostreptomycin which has been found to be effective in the treatment of brucellosis [9] might be utilized in the occasional case of Brucella endocarditis.

---

[5] Spicer, S.: Bacteriologic Studies of the Newer Antibiotics: Effect of Combined Drugs on Microorganisms, J. Lab. & Clin. Med. **36**: 183, 1950.

[6] Chandler, C. A.; Schoenbach, E. B., and Bryer, M. S.: Observations on Staphylococcal Infections Treated with Aureomycin, Pediatrics **4**: 149, 1949. Rice, W. G., and Lonergan, A. M.: Penicillin-Resistant Staphylococci, Am. J. Clin. Path. **19**: 1083, 1949. Rountree, P. M., and Thomson, E. F.: Incidence of Penicillin-Resistant and Streptomycin-Resistant Staphylococci in a Hospital, Lancet **2**: 501, 1949. Spink, W. W.: Clinical and Biologic Significance of Penicillin-Resistant Staphylococci, Including Observations with Streptomycin, Aureomycin, Chloramphenicol and Terramycin, J. Lab. & Clin. Med. **37**: 278, 1951.

[7] Levinson, et al.[2] Spies, H. W.; Dowling, H. F.; Lepfer, M. H.; Wolfe, C. K., and Caldwell, E. R., Jr.: Aureomycin in the Treatment of Bacterial Endocarditis, Arch. Int. Med. **87**: 66 (Jan.) 1951.

[8] Smith, A. G.: Endocarditis Due to Escherichia Coli, New England J. Med. **243**: 129, 1950. Hoffman, M. S.; Wellman, W. E., and Sayre, G. P.: Escherichia Coli Endocarditis: Report of Case, Proc. Staff Meet., Mayo Clin. **26**: 1, 1951.

[9] Herrell, W. E., and Barber, T. E.: New Method for Treatment of Brucellosis, J. A. M. A. **144**: 519 (Oct. 14) 1950.

SUMMARY

1. Aureomycin was administered orally to 11 patients with subacute bacterial endocarditis due in 8 to nonhemolytic streptococci. Four to 6 gm. was given daily in intermittent doses for five to eight weeks.

2. The organism isolated from the blood stream was the alpha Streptococcus (viridans) in six patients and the Streptococcus fecalis (Enterococcus) in two patients. Blood cultures were negative in three patients.

3. Aureomycin effected a cure in two of the eight patients with positive blood cultures. In one of these a relapse had previously followed an adequate course of combined penicillin and streptomycin. Five of the six patients who had not recovered with aureomycin were subsequently cured by penicillin or by a combination of antibiotics. In addition, aureomycin effected a cure in two of the three patients with negative blood cultures.

4. Gastrointestinal symptoms, the sole toxic manifestation, occurred, usually after prolonged therapy.

5. As a rule aureomycin therapy was followed by prompt clinical improvement, restoration of normal temperature, and negative blood cultures. But within three to seven days after stoppage of the drug, fever and positive blood cultures recurred. These observations supported bacteriological studies which indicated that the action of aureomycin in the doses given is bacteriostatic and not bactericidal.

6. Aureomycin should be regarded only as an adjunct to penicillin in the treatment of bacterial endocarditis. It is indicated (a) in the treatment of nonhemolytic streptoccal endocarditis which has failed to respond to penicillin; (b) in other forms of endocarditis due to penicillin-resistant organisms, notably penicillin-resistant staphylococci; (c) in endocarditis due to gram-negative bacilli sensitive to this drug; and (d) in combination with other antibiotics when the causative organism is most sensitive to such combinations in vitro.

1088 Park Ave.

EVOLUTION OF MEDICINE

CHAIRMAN'S ADDRESS

Alvis E. Greer, M.D., Houston, Texas

There has been through the past ages a slow but progressive evolution in the development of medical intelligence. During the period which followed the appearance of man on the earth, paleopathologists have revealed that prehistoric man showed definite evidences of disease, lesions which conformed to diseases of the present day, such as pyorrhea alveolaris, arthritis, periostitis, and necrosis. Garrison mentions a probable actinomycosis in a Miocene horse and a hemangioma in the bones of a Mesozoic dinosaur. Research has furnished ample proof that these lesions existed in the Tertiary and Quaternary ages, and that prehistoric man was afflicted with pathogenic conditions throughout a period of hundreds of thousands of years. Primitive man viewed illness and recovery as a contest between two opponents wielding sorcery; the weapons were mythical or magical, and he believed that magic must be met by magic and that the origin of disease was demonistic. Naturally there arose certain persons in each tribe, who, through claims of secret power and mythical art and close communion with the spirit world, proclaimed themselves capable of fending off demons and appeasing the wrath of an offended and angry deity. Many methods, such as religious observances (sacrifices, prayer, fumigation, purification, fasting), as well as the procedure of magic were used to this end. The prevention of disease was conceived, the amulet being the oldest form of prophylaxis known. Even to our times the wearing of bags of asofoetida about the neck to protect against disease has survived from the primitive custom of wearing on the body portions of animals and rare, polished, or odoriferous objects. At that time the diagnosis and prognosis of disease was derived only from visions and supernatural manifestations. However, in spite of the activities of these witch doctors, empirical methods were not lost sight of and numerous purgatives, stomachics, emetics, vermifuges, aphrodisiacs, narcotics, vesicants, and crude surgical practices (cupping, bloodletting, scarification, and trephining) were used.

The Sumerians, about 3000 or 4000 B.C., through their higher attainments in the arts of civilization, especially astronomy, religion, and the natural sciences, gave to the Babylonians and the Assyrians, the Semetic conquerors of Mesopotamia, the elements of morals, learning, and the arts. They believed that the dependence of man on the other world was not only general, but that man, to the smallest details, was a copy of the universe, and his bodily condition and fate were ultimately dependent on the heavenly bodies and were to be foretold from them. This system survived almost to modern times; the family almanac bears mute witness to the prevalence today of such erroneous ideas. Through the influence of an educated priesthood, Babylonian-Assyrian medicine was systematized away from the point of view of a demonistic religion colored by astrology. Egyptian medicine, which dates from 3000 to 2000 B.C., was characterized by a more active realism allied to a mysticism which leaned strongly toward the material, in that it was abundantly empirical in spite of its mysticism, and its physicians acquired high reputations. Homer (in Pope's translation of the "Odyssey," Book iv, lines 320-325) praises the high position of medicine in Egypt, saying of the country:

> . . . . where prolific
> Nile with various simples clothes the fatten'd soil
> . . . .
> From Paeon sprung, their patron-god imparts
> To all the Pharian race his healing arts

Read before the Section on Diseases of the Chest at the One Hundredth Annual Session of the American Medical Association, Atlanta, June 13, 1951.

and Herodotus indicates their tendency toward specialization when he writes "one treats only the diseases of the eye, another those of the head, the teeth, the abdomen or the internal organs." It seems certain that Egypt exercised a powerful influence on the beginning of medicine in Judah and Greece, and through these countries on the future development of the art.

Greek medicine, although thousands of years younger than Oriental lore, links the remains of Oriental literature to the writings of Hippocrates, which were for a long time held to be the beginning, whereas they were really the completion, of Greek medical science, which contained the seed of all future medical development. Greek medicine was exhibited in its pure form from about 500 B.C., until the rise of the Roman Empire. The roots of the Greek system of medicine were obtained from various sources: From the conquered Minoans it is probable they derived certain ideas on sanitation, as well as the principles of the cult of the serpent associated with Æsculapius; from Mesopotamia came some of their more superstitious beliefs and a great treasury of astrological observation and anatomical knowledge, derived from the entrails of animals used in divination; from Egypt came many drugs, certain forms of surgical instruments, and a basis of medical ethics. Here the healing art rose above the level of formal dogma and mere empiricism, withdrew from the temple cult, and attempted to rear a synthetic organism of medical science, using deduction as the one sovereign method.

The march of medical science moving by fits and starts, finally reached its conclusion in the work of Galen, who attempted to transform Hippocratic art into a systematized science. And for many centuries medicine made no further progress, having seemed to have reached its supreme culmination in the work of the great physician of Pergamum, and the following 1,300 years were dominated with his ideas until they were destroyed by the researches of Harvey in the 17th century. After this period a group of surgeons, Roger Frugardi of Salerno, Jean Pitard, William of Saliceto, Lanfranc of Milan, Henry of Hermodeville, and Guy de Chuliac, thrust aside the rationalistic attitude of scientific inquiry and made therapy their aim. Although they were bitterly opposed by the physicians, the surgeons constantly increased in power, and with the appearance of Ambroise Paré and Pierre Franco in the 16th century, the therapeutic and empirical position shook the foundations of dogmatic internal medicine. Galen's ideas became more and more discredited, and it remained for Paracelsus to dismiss the elaborate Galenic pathology of centuries, and to hark back to the Hippocratic principles and stress work on and for results. During the 17th century the great metaphysical revival of that day tended, again, to a reversion to the former hazy general pathology. But Sydenham came to the rescue of the Hippocratic principles and again turned his attention to the sick man; he regarded his individual symptoms not as distinct entities and insisted on observing his reactions as a whole. Chesterfield in his "Letters to His Son," Oct. 4, 1776, emphasized the changing pattern of thought among physicians during the 18th century when he wrote:

> *Do not imagine that the knowledge,* which I so much recom mend to you is confined to books, pleasing, useful as that know edge is. But I comprehend in it the great knowledge of the worl still more necessary than that of books. In truth, they assist o another reciprocally; and no man will have either perfectly wh has not both. The knowledge of the world is only to be acquir in the world, and not in a closet. Books alone will never tea it to you; but they will suggest many things to your observatio which might otherwise escape you; and your own observatio upon mankind, when compared with those which you wi find in books, will help you to fix the true point.

Very little was actively done to combat disease itsel great attention being paid to careful observation of tl patient. The need for therapy seemed imperative, ar this created attempts like Hahnemann's homeopathy fill this need.

The great French school of Andral, Louis, and Lae nec brought a shift from prognosis and therapy to dia nosis, and this characteristic prevailed throughout t 19th century. The work of R. T. H. Laennec heraldec new epoch of scientific medicine. His invention a adaptation of the stethoscope was even more importa than the introduction of percussion, previously advocat by Leonard Auenbrugger. Allied with this urge towa anatomic diagnosis, there came down through the 1 century a closer study of physiology and pathology, lea ing the Sydenhamian principles of purely symptoma diagnosis not forgotten but somewhat in the backgrou But during this period great strides in medical knowle were made. Metaphysical and transcendental tendenc were overcome largely through the doctrines of philosopher F. W. von Schelling and the study of nat and all forms of animal life, seeking a solution for co plex biological problems and discarding reliance on philosophical hypothesis of the past. The progress chemistry also stimulated the quest for truth. Schlei and Schwann's discovery of the cellular nature of liv tissues, Robert Brown's discovery of the cell nucleus, Virchow's teaching of cellular pathology established cornerstone for modern biology. The work of Paste Koch, Darwin, Bichat, Magendie, Claud Bernard, K Ludwig, William Beaumont, Helmholtz, and the c icians Laennec, Richard Bright, Thomas Addison, Jo Škoda, Johann Lucas Schönlein, the surgeons Dup tren, Lister, Crawford Long, and many other nota physicians added to the medical luster of the 19th c tury.

Medicine, as we know it today, has evolved throug tediously slow, cumulative process, impeded in its p gress by an alternation of facts and knowledge, wh have been lost and regained, again, after lapses of c turies. To illustrate the fact that most all things new h been forgotten, a notable example is that Fracatari suggested in the 16th century that tuberculosis was c tagious. A study of the evolution of medical theo throughout the distant and not too distant past, view the road ahead of us with knowledge and appraisal of road behind us, should bear fruit and accelerate advancement of medical knowledge. With the open of the present century we find progress in medical scie strongly aligned with a great spirit for research. The velopment of physics, chemistry, and the biolog sciences stimulated investigators to hitherto unkno heights of progress. Notably in this connection I must mention the value to the 20th century investigations of Emil Fischer's work on proteins, Kossel's and Miescher-Ruesch's on nucleins, the discovery of electrons by Sir J. J. Thomson, Crookes' description of the cathode rays, and the discovery of the roentgen ray by Roentgen in the closing years of the 19th century. Becquerel's discovery of the radioactivity of uranium in 1896 led Marie Curie to identify a new element, radium. Work in a new field of experimental cytology and the genetic study of chromosomes followed. Great activity and advanced knowledge in physiology became evident (analysis of the physicochemical changes in the blood, studies of electrolyte balance, Alexis Carrel's "isolated heart," the reservoir function of the spleen, studies of renal function). Within the past few decades important work has been done in physiology (the hormones, shock and blood transfusion, muscle tone, respiration), in bacteriology (the Schick test, toxin-antitoxin and toxoid in diphtheria, the work of the Dicks in scarlatina, work in botulism, syphilis, and typhus fever). Progress in medicine has been rapid, and outstanding advancements are liver extract in anemia, malarial treatment of general paralysis of the insane, insulin treatment in diabetes, the anaphylactic nature of asthma, the use of iodine and thiouracil in goiter, the treatment of tuberculosis with the sulfones and para-aminosalicylic acid, tibione, and streptomycin, and the discovery of the antibiotics. There have been extensive additions to our knowledge of electrocardiography, radiology, and roentgenology.

An attempt has been made in this paper to bring before the reader the successive steps of medical thought from the hazy horizon of antiquity to the brighter light of the present day, more greatly illuminated by the tremendous strides in the science of chemistry and physics. There has been a gradual tendency, constantly developing, during the past two centuries to study the disease itself to the exclusion of its host—man. A return to a modification of the Hippocratic tendency to view man as a whole, as well as his disease, seems timely. Browning aptly states my point when he writes:

> I possess two sorts of knowledge; one—vast, shadowy,
> Hints of the unbounded aim I once pursued,—
> The other consists of many secrets, caught
> While bent on nobler prize—perhaps a few
> Prime principles which may conduct too much;
> The last I offer to my followers here.

The practice of medicine in the past two decades has undergone profound changes. The science and the art of medicine are irrevocably entwined in the practice of medicine. A successful practitioner must be a medical scientist and a worker for the people, knowing the laws of nature, possessing calm judgment, capable of realistic reasoning, and possessing an abundance of intuition. With the introduction of laboratory methods for diagnosis, a tendency to rely too greatly on such tests and abrogation of bedside and clinical observations resulted. This mistake was due to ignorance of the limitations of such tests. Today expert physicians tend to scrutinize and evaluate information from both the laboratory and bedside observation, and certainly this is the best method of procedure.

But what of the physician of tomorrow? Unfortunately for accuracy in the diagnosis and treatment of disease there is no standard for normality to apply to a human being. From a medical standpoint a normal or average person is one who has the kind of responsiveness, or we might say the biological reactivity, which is adequate to protect him from the normal environmental hazards of life. We regret that all persons are not "healthy" in this sense. Disease occurs when personal deviations are so great that compensatory or adaptive processes temporarily or permanently fail to make the person adequately responsive. Therefore, we must appreciate that it is the totality of conditions (internal and external) and not a single factor (germ or otherwise) which is causative. The physician of tomorrow must view disease with the telescope as well as with the microscope. Biological, sociological, and psychological influences must be considered as well as the bacteriological and pathological factors. Will the point of view of the future physician be solely confined to the pathology of disease? Or will he take proper cognizance of the varying influences of the manifold reactions in the soil on which the disease has chosen to encroach? I believe the answer is affirmatively in favor of the last question and that the physician will temper the use of his array of scientific facts with an honest attempt to evaluate their effect on man—the Personality. I am not advocating a departure from the scientific attitude, ready to discard the great achievements of the past. To do so would be to hark back to the inconsistencies of the Middle Ages. The physician of tomorrow will use these facts, through a greater experience, with more effectiveness than we do today, but he will add a fuller, more comprehensive understanding of the complicated, intricate processes which go to make up the personality of man. The complexities and the ramifying avenues of a greater civilization may further intensify the effects of that civilization on man, new problems will arise, new diseases will become evident, man himself will doubtless be a more highly developed organism; but the essential principle will remain—we must view disease not apart from but with man. The physician of the future must be versed in the humanities as well as the sciences, and his success in the science of medicine must go hand in hand with his appreciation of its art; he must never forget the assertion of Hippocrates that where there is love of man there is also love of the art of medicine.

3717 Main St.

New Remedies.—For the ethical and proper announcing of advances in medicine, physicians are honor bound to present their findings before scientific and medical forums, to submit their manuscripts to appropriate journals and to abide by the judgment of their peers, which is necessarily and rightfully conservative on the matter of accepting widely-touted discoveries at face value on one person's say-so. No significant contribution can be withheld through reactionary opposition. The mission of the investigator is to present new facts, open to scientific analysis, duplication and verification by others. It has been found tedious and unfruitful to have to confirm work performed with secret formulas and recipes—even if trademarked. In a scientific paper, a fully-revealed factual content is the only basis for its conclusions, and it is of critical importance that therapeutic studies be adequately controlled.—Editorial, Strip-T ase Thera
The New England Journal of Medicine, 1951.

PROTECTION AGAINST X-RAY AND BETA RADIATION

LEAD GLASS FABRIC

Vincent W. Archer, M.D., George Cooper Jr., M.D., J. G. Kroll, M.D.
and
D. A. Cunningham, M.D., Charlottesville, Va.

The increased incidence of leukemia in physicians exposed to radiation is a matter of interest and concern to all persons dealing with radiation. Two reports in particular have stimulated this interest. In 1944, March's [1] article in *Radiology* pointed out this hazard. In 1946, Ulrich's [2] analysis of the obituary notices in the *Journal of the American Medical Association* for the 10-year period 1935-1944 was published in the *New England Journal of Medicine.* His study showed eight times as many deaths from leukemia among those listed as specializing in radiology as would be expected on a statistical basis.

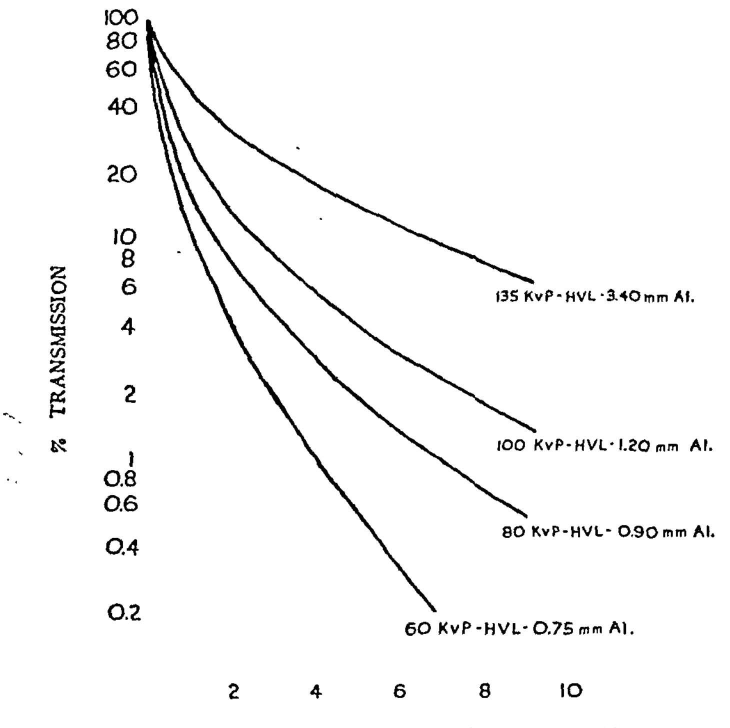


Fig. 1.—Chart showing percentage of transmission of the x-ray beam through varying thicknesses of lead glass fabric using several different voltages.

Henshaw [3] reported that he had almost uniformly produced leukemia in mice by exposure to radiation. His work, in conjunction with Ulrich's statistical analysis of causes of death of physicians, adds strength to the theory that radiation may and probably does produce leukemia in some exposed persons.

The question naturally arises as to why leukemia does not develop in all persons receiving small amounts of radiation over long periods of time as do the experimental animals. In reply, it might be pointed out that only a small percentage of smokers have carcinoma of the lip or tongue but that a very high percentage of these lesions develop in smokers. As pointed out by Evarts Graham [4] the same is true of cancer of the lung. Similarly, cancer of the cervix does not develop in all patients with cervicitis, but an extremely high percentage of patients with cervical cancer had pre-existing cervicitis. Many workers in the field of cancer believe that certain individuals have what might be termed a "malignant tendency" and that chronic irritation may touch off a carcinomatous change in these susceptible persons. Might not some persons have delicately balanced hemopoietic systems which long-continued slight radiological insult may change into leukemia? Whatever the causative relationship, it seems logical to connect the high incidence o leukemia in persons exposed to radiation with the production of leukemia in experimental animals by radiation

In thinking over this problem we came to the conclusion that exposure of parts of the body not covered b *conventional protective devices might be responsible* fo the abnormal frequency of leukemia in radiologists. Wit the usual protection the portion of the arm above th lead rubber glove is exposed. Neither the shoulders no the body above the upper margin of the lead rubber apro *is shielded. The portion of the leg below the apron* i unprotected unless a lead-backed chair is used.

We considered all of the foregoing facts and conclude that some garment should be devised to cover the po tions of the body not presently protected. Any materi used should be flexible enough to drape over the leg shoulders, and arms, resistant to cracking in sharp flexed areas, cleanable, and at least fairly comfortab All types of protective materials were studied in an a tempt to find a suitable substance, but none of the *seemed to fill all of these requirements. We then* co ceived the idea of spun lead glass woven into a fabri Ordinary spun glass fabric is widely used, so why n lead glass fabric?

The Owens-Corning Fiberglas research laborato was visited, and it was learned that lead glass had be spun into thread in 1941 following the suggestion Lewison,[5] who described it in the *Bulletin of the Ame ican College of Surgeons.* Lewison used the thread as radiopaque medium solely for the x-ray identification sponges in surgical procedures. Under contract with u the Fiberglas research laboratory produced a quantity this lead glass thread and wove it into a cloth.

After receiving the cloth our next step was to dete mine the percentage of transmission through varyi

---

From the Department of Roentgenology, University of Virginia Hospital.

[1] March, H. C.: Leukemia in Radiologists, Radiology **43**: 275-278 (Sept.) 1944.

[2] Ulrich, H.: Incidence of Leukemia in Radiologists, New England J. Med. **234**: 45 (Jan. 10) 1946.

[3] Henshaw, P. S.: Leukemia in Mice Following Exposure to X-Rays, Radiology **43**: 279 (Sept.) 1944.

[4] Wynder, E. L., and Graham, E. A.: Tobacco Smoking as Possible Etiologic Factor in Bronchiogenic Carcinoma: Study of 684 Proved Cases, J. A. M. A. **143**: 329 (May 27) 1950.

[5] Lewison, E. F.: Rayable Gauze as Factor of Safety in Surgical Operations, Bull. Am. Coll. Surgeons **27**: 39 (Jan.) 1942.

thicknesses of this material, using several different voltages in the production of the x-ray beam (Fig. 1). For comparison with sheet lead, a second series of measurements was made with the same voltages as were employed in the lead glass fabric measurements (Fig. 2). Comparison of the two sets of measurements shows that one thickness of lead glass fabric is equivalent in protection to 0.035 mm. of sheet lead.

Our next problem was to determine how much protection was needed over various parts of the body. When our work was begun, over two years ago, there were no accurate figures available in the literature. At the suggestion of Dr. Lauriston Taylor of the National Bureau of Standards, Secretary of the International Commission on Radiological Protection, measurements were made of the amount of radiation received on different sections of the body under actual working conditions in our own x-ray department. Large intraoral dental film packets were made up (Fig. 3) and were worn over eight different parts of the body (Fig. 4). The location and amount of radiation in milliroentgens received during 43 fluoroscopic examinations are shown in the left portion of Figure 4. The right portion of Figure 4 shows in milliroentgens the protection afforded by varying thicknesses of lead glass fabric. The density readings of the films were made on an Owens-Sweet densitometer, and these in turn were double-checked by a thin-walled chamber stray radiation meter. The quality or voltage equivalent of stray radiation was checked by Carl Braestrup of New York City and was found, contrary to general belief, to be practically the same as the primary radiation received by the patient. In our department this is usually 80 kv. in fluoroscopic work.

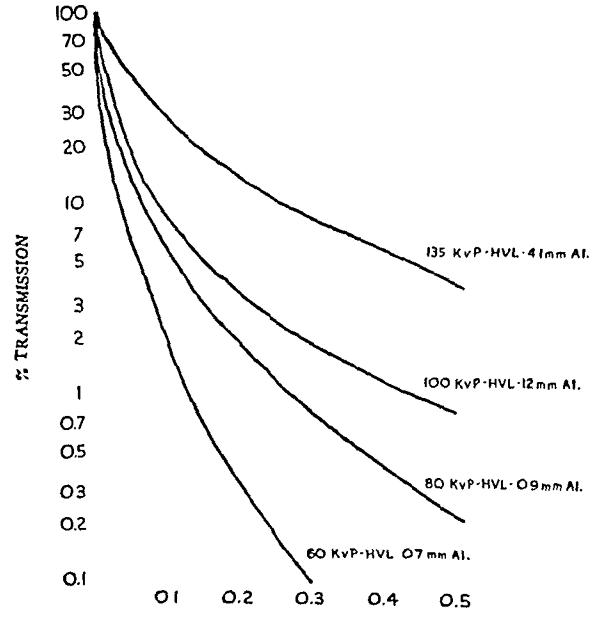


Fig. 2.—Chart showing percentage of transmission of the x-ray beams through sheet lead using the same voltages as in Fig. 1.

After these measurements had been obtained and the amount of radiation received by the operator on various parts of the body had been noted, a gown was constructed with multiple layers of lead glass fabric protecting the parts receiving the most radiation. The experimental gown had the following thicknesses: abdomen, 5 layers, chest, 3, lower skirt, 2, shoulders to elbows, 2, lower arms, 3, back, open. The weight of this gown was 10½ lb. (4.7 kg.) as compared with 11 lb. (5 kg.) for a conventional lead rubber apron, although all parts of the body receiving appreciable amounts of radiation were fully protected. It was so flexible, however, that over half of the weight was belted in at the waist and much of the weight of the upper half was draped over the shoulders.

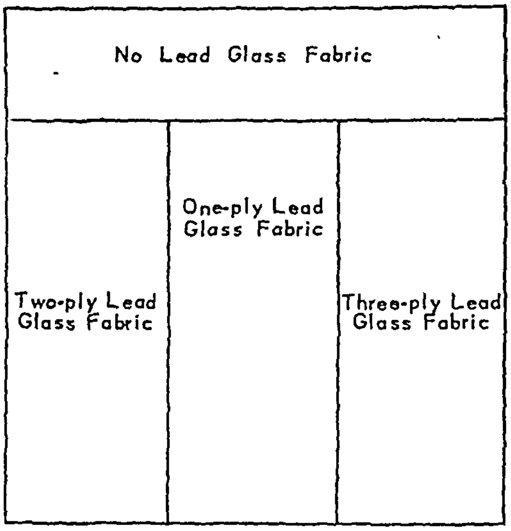

No Lead Glass Fabric
One-ply Lead Glass Fabric
Two-ply Lead Glass Fabric
Three-ply Lead Glass Fabric

Fig. 3.—Drawing showing how intraoral dental film packets of Kodak Occlusal Superspeed film were partially covered with varying thicknesses of lead glass fabric, with one portion left uncovered. The packets were worn during 43 fluoroscopic examinations, 24 of the stomach, 15 of the colon, and 4 of the esophagus, during a total of 1 hour, 59 minutes, and 42 seconds of activation of the fluoroscopic tube.

When one recalls that the present "tolerance dose" of radiation is 300 milliroentgens per week (Fig. 4) it is seen that much more protection than is necessary was incorporated into this experimental gown. However, since no one really knows what amount of radiation might be harmful, it seems wise to give as much protection as be given without making the gown too hea[illegible]

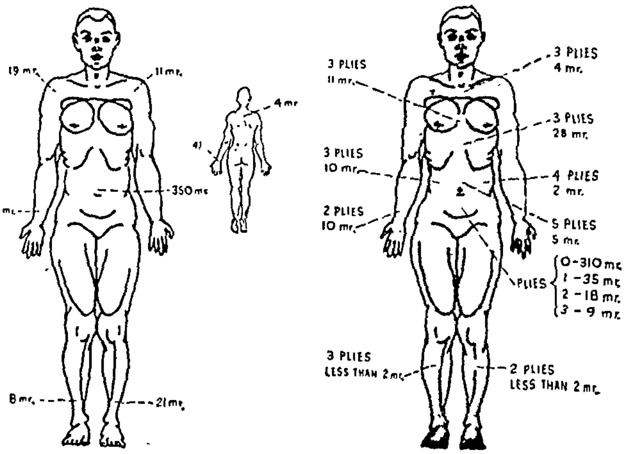
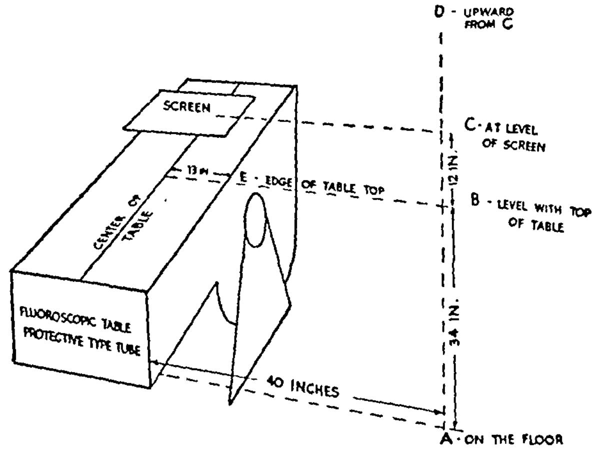


Fig. 4.—Drawing showing radiation in milliroentgens received by operator when no protection was used during 43 fluoroscopic examinations (left) and radiation received through various thicknesses of lead glass fabric during 43 fluoroscopic examinations (right).

It should be remembered that the measurements presented were made under our own working conditions. From conversations with many persons concerning the amount of protection needed, it is apparent that this varies greatly according to varying working conditions. The number of examinations done and the actual time of activating of the fluoroscopic tube certainly play a large part in determining the protection needed. The location of walls which will scatter the secondary radiation also plays a not inconsiderable role. By far the greatest variable is the size of the image on the fluoroscopic screen. Figure 5 shows the tremendous increase in radiation received by the operator when a large screen image is used. This is a fact not generally realized by those untrained in the physics of radiation and presents a real hazard to the nonradiologist who has a fluoroscope in his office. It is therefore apparent that no general statements can be made as to the need for protection based on the number of examinations, since working conditions so greatly alter the amount of radiation received.

The advantages of this garment are as follows: (1) complete protection over all exposed portions of the body; (2) flexibility, so that the necessary weight is evenly distributed over the body; (3) durability, shown by flexing tests made at the Institute of Textile Technology with 22,000 flexes over a ¼ in. sq. shaft in one direction and 22,000 in the opposite direction with no microscopic breakage seen; and (4) cleanability, since the garment may be washed with soap and water.



TUBE ENERGIZED AT 72 KvP AND 5 Ma.

No patient - shutter aperture	Intensity - Milli-roentgens per hour
Closed	40 at A, decreasing to 0 above B
Screen image 3 X 3 inches	50 at "A", decreasing to 25 at "B" and less above "B"
Fully open	50 at A, increasing to 250 at "B" and "C" decreasing above "C"

PATIENT SUPINE ON TABLE AS FOR BARIUM ENEMA

Shutter aperture	Intensity - Milli-roentgens per hour
Closed	10 at A, decreasing to 0 above "B"
Screen image 3 x 3 inches	6 at "A", increasing to 10 at "B" and "C", decreasing toward "D"; 55 at "E" (edge of table)
Fully open - no primary passing around patient	10 at A, increasing to 130 at "B and C", decreasing toward "D" 1000 at "E"

Fig. 5.—Chart showing tremendous increase in scattered radiation received by operator when the shutter aperture is open during fluoroscopy.

It is obvious that this material may be used as protection in marking off skin surfaces in superficial x-ray treatment, since it is easily folded into as many thicknesses as desired and is as flexible as a towel, so that areas may be easily demarcated. It can be cleaned very readily, is whitish in color, and aesthetically is much preferable to lead foil for this reason alone. It may be used as a cur to block off radiation in a superficial therapy room or a radiographic room where such procedures as an ography and cardiac catheterization are being perform

Lead glass fabric is very efficient in protection again beta radiation of atomic fission products; naturally, n wearable weight of any type of material will afford p tection against gamma radiation. The protection of l glass fabric against beta radiation of P^{32} as compa with other substances tested is shown in Figure 6.

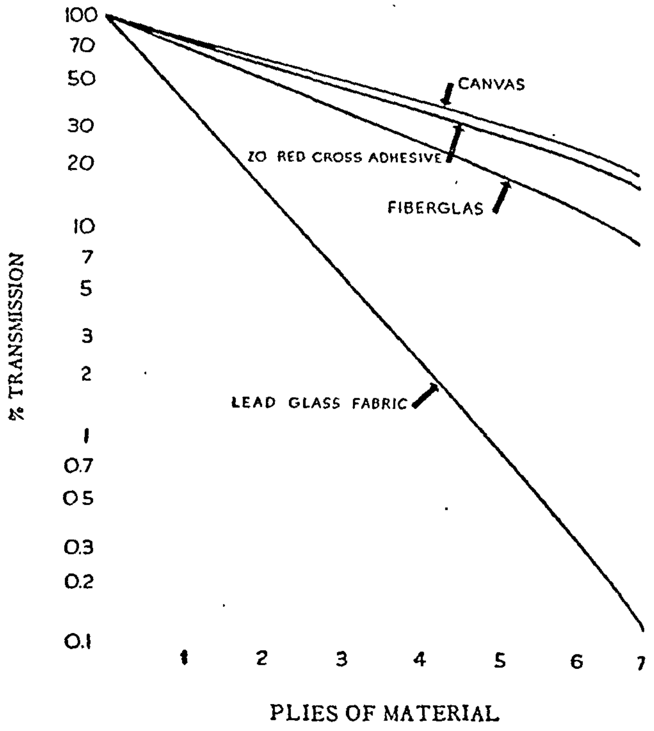


Fig. 6.—Chart showing protection afforded against beta radiation radioactive isotope P^{32} by various thicknesses of lead glass fabric.

SUMMARY

Lead glass fabric affords excellent protection aga x-radiation. It may be used as a durable, flexible, cle able garment, or in place of lead foil or lead rubbe superficial treatment. It may be used as a protective tain. Lead glass fabric is very efficient in protec against beta radiation of atomic fission products.

University P. O. Box 1637.

Biochemical Tests in Cancer Diagnosis.—Biochemical met have come to occupy an increasingly important place in *diagnosis of disease*, and a number of different biochen studies may contribute significantly to establishing the diag of certain types of malignant tumors. In general, these test not specifically establish the diagnosis of a malignant tum a biopsy does. Rather, they contribute information which, integrated with the clinical findings, may help to point the to the correct diagnosis. *There is one exception to this*, in a markedly increased concentration of the enzyme acid p phatase in serum will establish the diagnosis of carcinom the prostate gland with a degree of accuracy approaching of microscopic examination of biopsy material. Unfortuna this is probably the only biochemical test that can be use establish the diagnosis of a malignant tumor in man. There however, a number of other biochemical tests which may the clinician to a considerable degree in diagnosing certain of cancer, provided they are interpreted intelligently and grated with the entire clinical picture.—Ralph Jones Jr., M Biochemical Methods in the Diagnosis of Malignancy, *The M cal Clinics of North America*, November, 1951.

LIVER BIOPSY AND LIVER FUNCTION TESTS

COMPLEMENTARY ROLES IN DIAGNOSIS OF LIVER DISEASE

J. Edward Berk, M.D.
and
Harry Shay, M.D., Philadelphia

Development of the technique for liver aspiration biopsy appears to have created the impression in some quarters that this procedure may supplant liver function tests. We wish to point out that both aspiration biopsy and function tests have a definite field of usefulness and that they are neither competitive nor mutually exclusive.

Several investigators have attempted to correlate the results of liver function tests with observed structural changes in various disorders of the liver.[1] Their observations have not led to uniform conclusions. If they have served to establish any correlation, it is merely a rough parallelism between the severity or degree of diffuse parenchymal cell damage on the one hand, and impairment of hepatocellular function on the other. Such results are not surprising. Earlier efforts failed to correlate structure and function in diseases of the kidney. Even more difficulty would be expected in an organ possessed, as is the liver, of such diverse and complex functions.

Liver function tests are primarily designed to evaluate the functional integrity of the liver. They may indicate hepatic disease by revealing impairment in hepatic function, but they provide no information regarding the precise nature of the causative lesion. Their usefulness in evaluation of liver disease and interpretation of clinical problems involving the liver has been repeatedly demonstrated. It should be stressed, however, that they serve best as diagnostic tools when correlated with clinical and other laboratory findings. It may be objected that not all the tests referred to as liver function tests measure a known specific function of the liver. A positive thymol turbidity test, for example, appears to result basically from certain alterations in serum proteins and lipids that may be brought about by disturbances other than in liver function. Nevertheless, this test and the other serum flocculation tests to which the same objection might be raised have been positive so frequently in disorders with hepatic involvement that they have come to be looked upon as indicators of liver derangement.

Liver biopsy is primarily concerned with structure. It is intended to show the extent and degree to which the hepatic architecture has been altered and to identify, if possible, the pathologic process that may be present. It yields no information regarding the functional integrity of the liver. Our experience in a series of 45 consecutive cases in which biopsy was performed because of clinical suspicion of some type of liver disease is illustrative of the contribution this method of study may make to the accurate appraisal of liver disease. These cases are exclusive of other groups of specially selected cases in which aspiration biopsy was done as part of a systematic study of certain diseases. In each of the cases comprising the group under consideration, com[illegible]on was made between the clinical diagnosis prior [illegible]d the histopathologic diagnosis arrived at af[illegible] biopsy specimen. The prebiopsy impression in each instance was that formed by the clinician on the basis of history, physical findings, and general laboratory and roentgenologic examinations and was without benefit of detailed liver function studies. In 12 of these 45 cases (26.6%) the diagnosis established by biopsy proved to be significantly different from that arrived at clinically (Table 1).

When hepatic cell structure is altered by a pathologic process, function may be expected to suffer to a greater or lesser degree. Conversely, when functional derangement is demonstrated, some degree of structural abnormality may be suspected. Such correlative association is not always to be found, however; indeed, there is often substantial discrepancy between the two. This is well illustrated by a set of observations we have made in a group of 40 patients clinically suspected of having some disorder of the liver. In every case but two a battery of liver function tests was conducted on blood samples taken at the time aspiration liver biopsy was performed. In one of the two exceptions, a case of metastatic carcinoma, liver functions were not tested until seven days after biopsy; in the second exception the liver showed

TABLE 1.—*Comparison of Prebiopsy and Postbiopsy Diagnoses in Twelve Cases of Clinically Suspected Liver Disease*

	Prebiopsy Clinical Diagnosis	Histopathologic Diagnosis
1.	Cirrhosis, alcoholic	Normal liver except for possibly slight increase in portal fibrous tissue
2.	Cirrhosis, nutritional	Normal liver
3.	Cirrhosis	Carcinoma (hepatoma?)
4.	Cirrhosis, obstructive biliary	Carcinoma (cholangioma?)
5.	Metastatic carcinoma	Normal liver
6	Metastatic carcinoma	Sarcoidosis
7.	Metastatic carcinoma	Periportal fibrosis with inflammatory cell infiltration
8.	Fatty liver	Normal liver except for nuclear vacuolation of questionable significance
9.	Hemochromatosis	Slight increase in portal fibrous tissue with some inflammatory cell infiltration in portal triads
10.	Hepatitis associated with Listeria monocytogenes septicemia	Carcinoma (hepatoma?)
11.	Hepatic syphilis	Metastatic carcinoma
12.	Pulmonary tuberculosis with hepatomegaly (tuberculous hepatitis?)	Portal fibrosis

---

From the Department of Medicine and the Fels Research Institute, Temple University School of Medicine.

[1] Hoffbauer, F. W.; Evans, G. T., and Watson, C. J.: Cirrhosis of the Liver, with Particular Reference to Correlation of Composite Liver Function Studies with Liver Biopsy, M. Clin. North America 29:363, 1945. Mateer, J. G.; Hartman, F. W.; Baltz, J. I.; Fallis, L. D; McGraw, A. B., and Steele, H. H.: Combined Liver Biopsy and Liver Function Study in 132 Cases of Cholelithiasis and 31 Cases of Peptic Ulcer (Operated Cases), Gastroenterology 11:284, 1948. Franklin, M.; Popper, H.; Steigmann, F., and Kozoll, D. D.: Relation Between Structural and Functional Alterations of the Liver, J. Lab. & Clin. Med. [illegible] Topp, J. H.; Lindert, M. C. F., and Murphy, F. D. [illegible] Liver, Arch. Int. Med. 81:832, 1948. Popper, H. [illegible] K. A.; Kozoll, D. D., and Franklin, M.: Cor[illegible] and Liver Structure, Clinical Applications, [illegible] Kinsell, L. W.; Weiss, H. A.; Michaels, [illegible] H. C.: The Correlation of Hepatic S[illegible] 1949.

nothing more than some nuclear vacuolation, and liver function tests had been conducted two days before biopsy.

On the basis of the results of the function tests, these cases were divided into three groups: (1) those in which all tests were uniformly negative; (2) those with only one test (or more than one test of a group measuring essentially the same function) positive; and (3) those with two or more tests of different functions positive. This division was made to avoid dogmatic interpretation of a single liver function test and also because it was realized that the results of some of these tests may be influenced by extrahepatic factors. Similarly, with respect to the histopathologic observations, the cases were separated into: (1) those without discernible abnormality; (2) those with minor or poorly defined changes; and (3) those with definite and clear-cut alterations.

As may be seen in Table 2, liver function was unquestionably disturbed in 73%, while in 65% there were clearly defined pathologic alterations in the structure of the liver. Although comparisons are drawn between two types of study, each singly performed, the close agree- ent between liver function and biopsy with respect to centage of cases with abnormal and normal findings apparent. What is not apparent, however, is the lack f absolute correlation between these measures of structure and function. Thus, in each of the four cases considered entirely normal by biopsy there was aberration in at least one of the functions measured. Of the 10 cases in which there were minor histopathologic alterations, the liver was functionally intact in only one; in eight cases there was impairment of two different liver functions, and in the remaining case there was derangement of one of the functions. Conversely, of the three cases with uniformly negative liver function tests, there were minor abnormalities in one and clear-cut and well-defined structural abnormalities in the other two.

TABLE 2.—*Comparative Results of Simultaneously Performed Liver Function Tests and Aspiration Biopsy in Forty Cases of Clinically Suspected Liver Disease*

	No. of Cases	Percentage
Liver function		
All tests negative	3	7.5
1 test positive (or more than 1 test in same group)	8	20
2 or more tests positive (different groups)	29	72.5
Liver Biopsy		
Normal	4	10
Minor histopathologic changes	10	25
Well-defined histopathologic changes	26	65

The application of liver function tests and biopsy in the evaluation of clinical problems and the correlation of these methods of study with each other, as well as with the clinical features, is illustrated by the following cases.

REPORT OF CASES

CASE 1.—E. J., a Negro, 15 years of age, was admitted to the hospital because of jaundice and recurring episodes of sharp umbilical pain occasionally associated with nausea and vomiting. The first such episode had occurred at the age of 13, about two years prior to admission. Physical examination disclosed an underdeveloped adolescent who was pale and obviously jaundiced. The heart was enlarged, and a systolic murmur was audible over the entire precordium. The liver and spleen could not be felt. Laboratory tests demonstrated anemia, with 2,250,000 erythrocytes per cubic millimeter and 6.8 gm. of hemoglobin per 100 cc. of blood. Sickle cells were noted in the blood smea along with anisocytosis, poikilocytosis, and polychromatophili There was a pronounced degree of sickling of the red blood cel in blood maintained in a reduced oxygen atmosphere. The le kocytes ranged in number from 12,800 to 18,100 per cub millimeter of blood. Spontaneously voided urine was da brown in color, and on shaking, the overlying foam was bil tinted. The results of a battery of liver function tests are giv in Table 3.

The gallbladder could not be visualized roentgenologica after oral administration of iodoalphionic acid (priodax®). In t region of the gallbladder, however, there was a cluster of p tially opaque calculi. A smaller group of similar shadows, int preted as calculi, was observed in the neighborhood of the cys duct. Liver aspiration biopsy showed the sinusoids to be dila and filled with blood. There were collections of bile pigm within many of the bile canaliculi and in some of the polygo cells as well. There was no evidence of inflammatory reacti and the parenchymal cells appeared to be intact. The section interpreted as showing congestion and bile stasis.

This case of established sickle cell anemia in a you Negro with jaundice and cholelithiasis illustrates h the combination of a battery of liver function tests liver biopsy may clarify a clinical problem of jaund Clinically, the discoloration of the urine was itself dence that regurgitation jaundice was present in addit to the hemolytic jaundice. However, it was still unc tain whether the regurgitation jaundice was caused associated hepatocellular dysfunction, or calculus struction, or both. Liver function tests confirmed element of regurgitation by demonstrating pronoun increase in prompt direct reacting bilirubin. hepatogram generally favored extrahepatic obstructi but there was also indication of impaired hepatocell function in the lower rates of ester to total serum c lesterol. The latter may be interpreted as largely a ref tion of diffuse hepatic impairment secondary to anoxia and hemolysis, but it is also possible that so of the diffuse impairment reflected by this test may h resulted from extrahepatic obstruction. The sulfobro phthalein sodium (bromsulphalein®) retention could be properly interpreted, because of hyperbilirubine Liver biopsy showed that the polygonal cells were n phologically intact and that the principal structural a ation was bile stasis indicative of extrahepatic obst tion.

When the information obtained from each of t approaches was combined, it was clear that the jaun was caused not only by hemolysis, but also by extr patic obstruction, probably the result of stone, and hepatic dysfunction secondary to one or both of thes

CASE 2.—H. J., a 34-year-old Negro was admitted to the pital because of jaundice and abdominal pain, which had recurring intermittently over the preceding two years. The was dull, constant, and distributed in band-like fashion ove upper abdomen. Pain frequently radiated directly through t back. Appetite was impaired during the painful episodes, occasionally there was nausea, and sometimes vomiting. urine always became dark, and the patient believed his were yellowed" with each attack of pain. Each episode us lasted only one to two days. In the three weeks prior to ad sion he had lost 20 lb. (9.1 kg.).

Physical examination disclosed a poorly nourished Negro, whose scleras were distinctly jaundiced. The live tended about 4 cm. below the costal cage; it presented a sm surface and sharp edge and was not tender. The spleen wa felt. The red blood cells numbered 3,240,000 per cubic millin of blood. The hemoglobin concentration was 10 gm. per 10 of blood. Serologic tests for syphilis were positive. Erythr fragility in hypotonic saline was within normal limits. The s fluid was normal. The urine was dark in color, and the foam test was positive for bile. Gastrointestinal x-ray studies were normal.

Results of liver function tests are shown in Table 3. Liver biopsy showed bile pigment collections in the bile capillaries and in many of the liver cells. Lipid vacuolation of the polygonal cells was pronounced. The cytoplasm of the parenchymal cells also showed unusual granularity and swelling, suggesting a disturbance in glycogen content. It was concluded that the appearance was that of a diffuse parenchymal cell disorder of undetermined type associated with some degree of biliary stasis.

This case demonstrates how information derived from history and physical examination, laboratory tests of liver function, and liver biopsy may all be necessary to clarify a particular situation involving jaundice and liver damage. On the basis of recurrent episodes of jaundice in a young male with only mild to moderate pain and definite hepatomegaly, a diagnosis of hepatitis was favored clinically. However, the presence of pain and the short duration of each attack made recurrent gallstone obstruction a possibility which could not be excluded with certainty. The lowered ester to total serum cholesterol ratio indicated diffuse parenchymal cell disorder. The slightly elevated serum alkaline phosphatase value in the presence of fairly pronounced hyperbilirubinemia was also consistent with hepatocellular disease. On the other hand, while the elevated total serum cholesterol and total lipids would not mitigate the diagnosis of hepatocellular disease, particularly in view of the other liver function results, elevation of these values is encountered oftener in extrahepatic obstruction. Liver biopsy gave evidence of both diffuse parenchymal cell alteration and bile stasis. The parenchymal cell changes were of a type and distribution not ordinarily seen secondary to obstruction alone. This plus the clinical impression prompted the use of conservative therapy.

With such a regimen, including antisyphilitic treatment, clinical improvement was definite and progressive. Symptoms disappeared, and there was gain in weight and reduction in the size of the liver. Liver biopsy performed five weeks after the first biopsy showed decided improvement, although the same changes noted originally were still discernible. Clinical improvement continued over a six-month follow-up period, with eventual return of the liver to normal size.

Case 3.—D. G., a 25-year-old white woman, native of Puerto Rico, was initially seen in the Gastro-Intestinal Clinic complaining of right lower quadrant abdominal pain that had been present for the previous 15 months. The pain was not well circumscribed and was vaguely described, but seemed to be made worse by lifting and standing at work. Physical examination was normal, aside from tenderness in the right lower abdominal quadrant. On full deep inspiration the liver was questionably palpable but was not otherwise remarkable.

Laboratory studies were entirely negative, save for the finding in the stool of cysts and trophozoites of Endamoeba histolytica, and ova of Schistosoma mansoni and Trichuris trichiura. The white blood cells numbered 5,900 per cubic millimeter of blood; 4% were eosinophils. Hepatic function was intact, as disclosed by a battery of tests (Table 3).

Liver biopsy showed the liver to be studded with small, discrete, granulomatous lesions of variable appearance. Some resembled tubercles with giant cell reaction. Others showed lymphocytic infiltration and partial hyalinization. Still others presented little more than circularly arranged hyaline material. In none of the lesions could ova be seen. The appearance, however, was consistent with the alterations produced when the liver is seeded by schistosomal ova, the parasites provoking an inflammatory reaction with eventual formation of small granulomas.

This case shows that the liver may be widely affected by disease without either clinical evidence to indicate liver derangement or laboratory signs of functional impairment. Such a situation seems particularly apt to occur when the disease process affecting the liver consists of discrete granulomatous lesions of advanced type, with little evidence of continued activity and without acute inflammatory reaction. Such would appear to be the case in this instance, and indeed, biopsy was prompted solely by the knowledge that the liver is commonly affected in schistosomiasis.

Case 4.—M. T., a 47-year-old white woman, had suffered impaired appetite for the year preceding admission to the hospital. Over this period she had lost 20 lb. (9.1 kg.). On several occasions she had experienced nausea and vomiting, but never hematemesis. She had consumed alcohol in several forms for many years and admitted drinking five jiggers of whisky each night at bedtime.

On examination the patient appeared pale, emaciated, and jaundiced. The tongue was smooth. Dilated venules were present over the cheeks together with numerous spider nevi. The palms showed thenar and hypothenar erythema. The liver extended 4 fingerbreadths below the costal margin and was hardened. The spl[illegible]s questionably palpable. Large external and m[illegible] siz[illegible]rnal hemo[illegible] present.

Table 3.—*Results of Liver Function Tests*

Test	Normal Values	Case 1	Case 2	Case 3	Case 4	Case 5
Serum bilirubin						
Prompt direct (1 min.)	< 0.2 mg. per 100 cc.	26.4	6.90	0.13	0.18	0.92
Total	< 1.0 mg. per 100 cc.	64.3	14.4	0.52	0.68	2.89
Cephalin-cholesterol flocculation (48 hr.)	< 2+	0	0	0	0	4+
Colloidal gold	< 2+	1+	0	±	0	4+
Thymol turbidity						
30 min. turbidity	< 4.0 units	2.1	4.0	2.0	1.0	20.3
18 hr. turbidity ratio	> 85%	109%	107%	110%	120%	10%
Gamma globulin turbidity	< 8.0 units	7.7	8.1	6.0	3.4	20.0
Serum alkaline phosphatase (S-J-R*)	< 9.0 units	17.5	11.8	2.72	13.3	6.94
Serum cholesterol						
Total	< 300 mg. per 100 cc.	256	440	229	252	492
Ratio of ester to total	> 50%	26%	32%	58%	50%	50%
Sulfobromophthalein sodium (2 mg.-30 min.-photoelect.)	< 5% retention	51.0%	....	4.4%	6.6% (Hem.)	33%
Plasma prothrombin activity	> 85% of normal	80%	79%	83%	100%	100%
Total serum lipids	< 1,000 mg. per 100 cc.	871	1,954	537	821	1,237

* Shinowara-Jones-Reinhart method.

Routine blood studies were not remarkable. Serologic tests for syphilis were negative. A gastrointestinal x-ray series disclosed no esophageal varices or other lesions of the upper alimentary canal. Liver function tests revealed little alteration in hepatic function (Table 3). Liver biopsy, however, showed a typical picture of advanced portal cirrhosis. There were degenerative changes in the hepatic cells, large amounts of intracellular lipid, and considerable fibrosis of the portal triads, with some bile duct proliferation.

This case illustrates the remarkable capacity of the liver to maintain functional integrity in the face of widespread cirrhosis sufficiently advanced to produce typical clinical signs. The serum alkaline phosphatase value was slightly elevated, and an equivocal amount of sulfobromophthalein was retained. All the other tests, however, were negative. Indeed, it was uncertainty created by these laboratory findings that prompted the clinician to request liver biopsy.

Case 5.—J. S., a white man, 65 years of age, had experienced recurrent episodes of crampy lower abdominal pain for four months prior to admission to the hospital. These painful occurrences were associated with nausea, vomiting, light-colored stools, and dark-colored urine. One week before admission these symptoms recurred and were followed by cough, fever, and semistupor.

Physical examination on admission revealed a semistuporous, acutely ill, elderly man, who was dyspneic and mildly cyanotic. The oral temperature ranged between 102.8 F and 103.8 F. The tongue was smooth and red, and the oropharynx was inflamed. There were dulness and rales over both lung bases. The heart was slightly enlarged to the left. Cardiac rhythm was regular, but a short basal systolic murmur was audible. The abdomen was distended and shifting dulness and a fluid wave indicated ascites. The liver extended 3 fingerbreadths below the right costal margin.

A red blood cell count disclosed a moderate normochromic anemia. The white blood cells numbered 11,500 per cubic millimeter of blood; 77% were polymorphonuclear. The blood urea itrogen was 36 mg. per 100 cc., and the plasma-carbon dioxide mbining power was 38 vol. %. Serologic tests for syphilis ere negative. One blood culture disclosed the presence of Listeria monocytogenes. Agglutination tests for typhoid and paratyphoid were negative. A roentgenogram of the chest revealed nothing of significance. The results of liver function tests are shown in Table 3.

The patient was digitalized, with moderate improvement in the dyspnea. The temperature gradually fell to normal with combined penicillin and aureomycin therapy. Abdominal paracentesis yielded bloody ascitic fluid. After this, liver aspiration biopsy was performed, disclosing that much of the liver was replaced by large masses of tumor cells suggesting hepatic cell origin.

This case demonstrates the significant contribution liver biopsy may make to diagnosis. From the clinical standpoint, this patient presented a picture entirely consistent with an acute infectious process of which hepatitis was a feature. Recovery of L. monocytogenes from the blood and response of the fever to antibiotic therapy strengthened this impression. Impairment of liver function disclosed by laboratory tests constituted additional evidence in support of diffuse hepatitis. Liver biopsy, however, revealed that the true nature of the underlying lesion in the liver was carcinoma, probably primary in origin.

COMMENT

The liver possesses a magnificent reserve and has a remarkable capacity to regenerate after injury or disease. Time and again it has been observed to perform its functions in fairly satisfactory fashion when only a small portion of its constituent cells remain undamaged. Liver function is also a dynamic process. For this reason it is of prime importance to repeat function tests at intervals in the course of the disease if aberrations are to be detected. Of importance, too, is the fact that only one or a few of the numerous functions of the liver may be deranged. Hence, for accurate appraisal a battery of tests is required, each designed to test a different function. In view of these considerations, it is not surprising that instances may be found wherein liver function tests reveal little or no impairment in the face of obvious disease, particularly if the tests employed are limited in scope and are not repeated.

On the other hand, the liver is often only zonally damaged or sporadically peppered with disease. Even when a given disease process has affected the liver diffusely, regenerative activity may result in areas of normal appearing replacement interspersed with remnant islands of destroyed or healing tissue. If the aspirating needle should fortuitously strike an area of disease, biopsy would be revealing. But if the needle should enter an unaffected or completely regenerated area, the liver would be erroneously interpreted as structurally intact. Under the latter circumstances, hepatic function tests might disclose alteration in one or more functions in what would seem to be a morphologically normal liver.

Discrepancy between structure and function in liver disease might also come about because of limitations in our ordinary methods of histologic examination. Hepatic physiology is intricately bound up with complex intracellular enzyme systems. Under certain conditions and ir various disease processes, any or all of these system may become disordered, thereby disrupting the particula function or functions they subserve. Though newer methods of histochemical examination of liver tissue permi recognition of some of these alterations, these enzym systems may be affected and yet the liver show no detectable structural change when examined in the customary manner.

The foregoing considerations make it clear that, i order to secure a composite picture of the effect of disease on the liver, it is necessary to add to the informatio gleaned from history and physical examination knowledge of both the functional status of the liver and th alterations that have taken place in its structure. T secure this knowledge, both liver function tests an liver biopsy are required. Since each supplies informatio peculiar to itself, and since comparison of the finding disclosed by each may show substantial discrepanc these procedures must be considered complementary an incapable of being substituted one for the other.

CONCLUSIONS

Detection and accurate appraisal of actual or suspecte liver disease require painstaking history and careful ph sical examination, composite liver function tests, an liver biopsy. Each of these avenues of approach yields i formation not obtainable by any one alone. They a complementary to each other and in no sense compet tive. When all three are judiciously employed and each correlated with the others, diagnostic accuracy will b improved and knowledge of the liver and its behavior i health and disease will be immeasurably increased.

255 S. 17th St. (Dr. Berk).

DIAGNOSTIC CLINICS FOR PRIVATE AMBULATORY PATIENTS

Robert P. McCombs, M.D., Boston

Every practicing physician conducts a diagnostic clinic for private ambulatory patients in his own office. He may obtain a complete medical history and make a complete physical examination—the two most important procedures in any diagnostic study. He usually has a laboratory for carrying out simple chemical and other special tests and perhaps a roentgen-ray apparatus for making certain x-ray examinations. There is no doubt that a conscientious, well-trained physician can be a highly efficient diagnostician, provided he is able to devote enough time to the examinations and limits them to the procedures that his training and experience qualify him to perform.

As the complexities of medical diagnosis have increased, the term "diagnostic clinic" has come to mean a good deal more than this, so that most people now think of a diagnostic clinic as a place where much technical equipment and many special skills are concentrated and where patients with obscure problems can go for diagnostic help.

RELATIONSHIP OF DIAGNOSTIC CLINIC TO HOSPITAL

Since hospitals necessarily had most of the equipment and staff needed and their personnel had considerable experience in diagnostic study, it was logical that diagnostic clinics for private ambulatory patients should have been organized chiefly in hospitals. Yet unless special planning has provided for it, the operation of a diagnostic clinic in close association with other activities in a general hospital has disadvantages. Few hospitals have been designed with much thought given to the care of private ambulatory patients. Office space is liable to be inadequate; laboratories are usually located in relatively inaccessible areas; x-ray facilities have been designed to care for only a specific number of bed patients, and the additional load of many ambulatory patients is apt to cause services to bog down. Since it is natural for the most seriously ill patients in the hospital to be given priority, the ambulatory diagnostic clinic is at a considerable disadvantage. As the clinic must continually compete for various hospital and professional services, the ambulatory patients are often subjected to irksome delays, and administration of the diagnostic clinic is rendered unduly difficult.

For these and other reasons a strong case can be made for separating the private ambulatory diagnostic functions from the other activities in a general hospital. In this country the diagnostic clinics that have shown the most vigor are those that have developed either independently of hospitals or in association with hospitals that are themselves primarily diagnostic centers where outpatient and inpatient work are closely integrated.

LIMITATION OF FUNCTION

Unless the activities of a diagnostic clinic are limited largely to those related to diagnosis, the major energies of the clinic will be dissipated in other directions. When its activities are controlled by other considerations, its function as a diagnostic center suffers. Clinics dominated by those whose primary inclinations are surgical are liable to develop into clinics for screening patients who require surgical treatment, where many important conditions are no doubt recognized, but where patients with nonsurgical diseases are likely to be inadequately studied and examined and perhaps inadequately understood as individuals.

Similarly, when medical treatment of a sizable number of patients is attempted in a clinic devoted primarily to diagnostic study, the efficiency of the diagnostic functions is impaired. By and large, ambulatory treatment can be effectively handled by the average family physician, once the diagnosis has been established. A clinic that retains most of its patients for treatment is therefore in direct competition with the family doctor.

The main object of diagnosis is to define the areas and methods of treatment; it is therefore obvious that every patient seen in a diagnostic clinic should have a physician who is interested in determining the best way of carrying out the recommendations of the clinic. The family physician is the one most likely to have this interest. He is also the one best able to judge the need for a patient's visit to a diagnostic center in the first place. When patients rather than physicians make this decision, the routine problems that can be handled much more expeditiously and economically by a family doctor assume undue importance in a clinic that should be devoted to the study of special problems.

Once the principle has been accepted that a diagnostic clinic serves primarily in the capacity of a consultant to family physicians, very pleasant relations can be established between referring physicians and the clinic. Problems concerning treatment (including surgery), socioeconomic difficulties, disposition to other hospitals, follow-up, and similar matters, are discussed freely with the referring physician, whose viewpoint can be most helpful in making important decisions. At the same time, the staff at the clinic can often be very helpful in arranging for special care not available in the patient's home town.

NEED FOR DIAGNOSTIC CLINICS

That diagnostic clinics are needed is attested to by their increasing number in the last decade. Patients and physicians alike recognize the advantages in having complete diagnostic studies made in a central establishment supervised by those with a special interest and trained experience in diagnostic work. One advantage of an arrangement such as this is that diagnostic studies accomplished through collaborative effort in a clinic can be more economical than those made on an individual private basis.

From the Joseph H. Pratt Diagnostic Clinic and the New England Center Hospital.

FEES

Fees are always a difficult problem. Some diagnostic clinics charge flat rates that are the same for all patients, regardless of the number of studies performed. The advantage of this system is that all patients know in advance what the total cost of the studies will be, and thus there should be no credit and collection difficulties. There are certain disadvantages, however, in that the patients who require a minimum of study pay more than necessary for their study and often request special and probably unnecessary tests because they know there can be no additional charge. Clinics operating under this system are liable to attract an unusually high percentage of cases requiring elaborate study.

A better system is to set a minimum fee covering the initial examinations, including the routine laboratory and x-ray examinations and administrative expenses. Every other test, consultation, or x-ray procedure is charged for at moderate rates; but the total charges are limited to a specified maximum, all costs over and above this being absorbed by the clinic. Under this plan patients know the ceiling price and that they may be charged considerably less. The maximum fee is set somewhat higher than the average fee or whatever would be charged if there were a flat fee.

INPATIENT VERSUS OUTPATIENT STUDY

A problem deserving mention is the one that arises when patients not ill enough to require actual hospitalization are admitted for study on an inpatient basis. Certainly, the same diagnostic study can be done at less expense on an outpatient basis than it can on an inpatient asis. It is not ethical to have to refuse admission to riously ill patients when beds are being preempted by atients who could just as well be studied on an outpatient basis. Yet various pressures tend to force needless hospital admissions. Some patients have the ingrained idea that inpatient study is more exhaustive than outpatient study; some attach undue importance to being "admitted for observation." Experience has shown, however, that almost all diagnostic studies can be expedited just as thoroughly and just as accurately on an outpatient as on a hospitalized basis. Occasional exceptions have to be made, of course, for elderly or timid patients from out of town; such admissions might be considered as a special service in therapeutic reassurance.

A factor forcing hospitalization on those who should be outpatients is health insurance. At the present time there are very few insurance organizations that pay for diagnostic studies of ambulatory patients. Most policies covering hospitalization do not cover payment for diagnostic study that is the sole cause of the hospitalization. Since limiting clauses of policies can be and are circumvented, however, the end result is that the insurer pays not only for diagnostic studies that are legitimately required but for room and care that are not. Hospital beds are used unnecessarily; insurance costs are abnormally magnified; and insurance premiums go up. There is a real need for some form of insurance that will pay for ambulatory diagnostic services conducted under satisfactory conditions.

STAFF

Some clinics operate with a full-time staff; some utiliz the part-time services of practitioners and specialis from the community; and some combine both method The advantages of a full-time staff are numerous. Whe the primary interest of the staff is naturally the develop ment of the clinic, the clinic can schedule its appoint ments with assurance that the physicians will not b unavoidably detained by emergencies elsewhere. Th unusual cases seen make the work in a diagnosti clinic quite stimulating, and if the clinic program is con bined with teaching and research it will prove an attra tive career to physicians of high caliber. One of the di advantages of a part-time staff is that the physicians a likely to feel that they are competing against themselv when they see at a nominal fee in the clinic patients wl might otherwise have been referred directly to them their own offices, to be seen as private patients at high consultation fees.

Diagnostic clinics that are operated in close cooper tion with hospitals serve as valuable training grounds f resident staffs. House officers who have had good pri training and work under adequate supervision can very helpful and can at the same time gain consideral experience by spending time on service in a diagnos clinic. The type of patient seen, the problems that ari and the approach to diagnosis are all similar to th likely to be encountered later on in private practi Here the resident learns the importance and difficult of differentiating organic from functional disease; also learns that some patients who have serious d orders may not be incapacitated for work. He lea that adequate studies can be made of outpatients.

It is important that the residents should not be ploited in the attempt to operate a diagnostic clinic o profitable basis. They should not be overburdened being required to see an excessive number of patie They should have a chance to view the problem e case presents as a whole, from start to finish, rather t have to serve as mere links in a production line. T should be encouraged to regard the patients as t responsibility, the senior staff being responsible for un trusive observation and supervision of the work and consultations. Various problems concerning outpati frequently need to be discussed, the same as on w rounds of inpatients. This can be done by having reg chart rounds and seeing each patient on as many o sions as possible. If residents feel that sufficient tim allowed for the complete study of their patients, an they are given stimulating instruction and permitte attend other important teaching activities of a med center, they are quite willing to serve in an ambulat clinic and take advantage of this type of experie On the other hand, if they are subjected to considera pressure, or are unable to follow their own patients are given inadequate instruction, they soon develop feeling that clinic work is a chore and may exert than their best efforts.

PRATT *DIAGNOSTIC CLINIC*

The history of the development and growth of Pratt Diagnostic Clinic serves to emphasize many of points outlined. Although the area in which the cl is opened, 13 years ago, was already highly developed dically, this clinic has grown to a point where over 00 patients a year are being referred to it for study nearly 4,000 family physicians. Admissions have been verned by the rule that patients are to be accepted only en referred by a physician to whose care they are to returned at the completion of the studies. A complete nscript of the clinic record is sent, together with ommendations, to the referring physician. (A part of cost of this service is charged to postgraduate medi- education.) The diagnosis and treatment are not cussed with the patient unless the referring physician ecifically requests that it be done. Until recently, no atment was given at the diagnostic center; at present, atment (including surgery) is undertaken only in ecial cases after discussion with the referring physician.

During the first several years all patients were studied an inpatient basis. When the outpatient diagnostic nic was begun it started slowly, but now it is the chief a in which the diagnostic services can continue to w. At present, about half of the diagnostic cases are ing seen on an outpatient basis. The decision whether atient should be hospitalized for study or seen in the tpatient clinic is made by the referring physician, who in the best position to judge the necessity for hospital mission.

The basic staff of the Pratt Diagnostic Clinic serves a full-time capacity. Staff members are actively en- ged in undergraduate and postgraduate medical teach- and participate in clinical or laboratory research. flexible teaching program is conducted for the rela- ely large resident staff, whose work is under close pervision of the senior staff. Despite the huge in- eases in the cost of hospital operation, fees for diag- stic study have been kept within reason by holding ofessional charges to a modest level. The clinic oper- es on a nonprofit basis. Undoubtedly all these factors ve contributed to the growth of the Pratt Diagnostic inic. The application of these principles in other areas ould be equally successful.

30 Bennet St.

e Parkinsonian Syndrome.—Parkinsonism . . . is a disease ocess which has long held the interest of physicians and re- rch workers. There are several reasons which account for s interest. In the first place, the clinical picture is bizarre, esenting involuntary movements associated with rigidity ich ultimately restricts all voluntary movement. Secondly, plight of victims of this disease is truly pathetic. People of rmal appearance are gradually transformed into caricatures their former selves. The abnormal movements make them nspicuous so that they avoid outside contacts. Their helpless- ss becomes progressively greater and ultimately they are de- ndent upon others for assistance in every detail of daily living. ally, although the disease process has long been studied in effort to understand its basic mechanisms and provide relief its victims, full understanding has not been reached. The ology and pathology of Parkinsonism are for the most part own. However, the pathophysiology of symptoms of the dis- se is not fully known, and the problems of therapy have been fling.—Judah Ebin, M.D., Surgical Treatment of Parkinson- n: Indications and Results, *Bulletin of the New York Academy Medicine*, November, 1951.

CLINICAL NOTES

A NEW TUBE FOR USE IN TREATMENT OF INTESTINAL OBSTRUCTION

John W. Devine Jr., M.D., Lynchburg, Va.

The presence of intestinal obstruction is a problem in therapy which has challenged the ingenuity of many surgeons. The difficulty of securing adequate decompression through removal of accumulated liquid and gas has led to a multiplicity of different technics and principles of intubation. In 1921 Levin[1] described his smooth catheter-tipped duodenal tube made of one piece of rubber. In the clinical application of this duodenal catheter Wangensteen[2] made a major contribution by introducing the principle of applying continuous suction to the tube by a system of water bottles. The Wangensteen tube has perforations over a length sufficient to allow some holes always to remain in the stomach. Later Miller and Abbott[3] reported the development and use of a long double-lumen rubber tube tipped with an air-filled balloon for intubation of the small intestine. Cantor[4] has more recently developed a long, single-lumen tube with mercury trapped in a loose balloon at the tip of the tube as an aid in propelling it down the gastrointestinal tract.

The problem with all the present tubes has been the impossibility of maintaining a constant drainage, since the suction creates a vacuum or negative pressure sufficient to cause the intestine to collapse around the tube. One loop of distended intestine may be emptied of liquid and gas, but as soon as this is accomplished a vacuum is created and the mucosa is sucked into all available holes, regardless of their number and size, so that drainage is stopped. This situation is more likely to occur in the intestines than in the stomach, which explains why Wangensteen's shorter tube with perforations extending up into the stomach so often gives much better drainage than the long tubes.

In my efforts to overcome this complication I have developed a tube-within-a-tube[4a] which prevents the vacuum mucosa obstruction phenomenon by the application of an air vent (see figure). The principle of the air vent can be adapted easily to any of the present single-lumen tubes. However, I am currently using a clear plastic tube with approximately 100 small holes extending over a distance of 25 cm. to within 1.5 cm. of the closed distal end. Into the outer tubes a small-diameter polyethylene tube is inserted for the entire length. A T-glass connector is inserted into the upper end of the outside tube, and the straight limb is closed off by a rubber diaphragm, through which a hypodermic needle is inserted to form a tight junction with the polyethylene tube. Suction is then applied to the other branch of the T-tube so that the outer tube becomes a suction tube and the polyethylene tube provides an air vent of atmosphere air at the distal end. Thus atmospheric air is constantly sucked into the intestine, and no vacuum is created. On occasions I have found it desirable to apply the suction to the small-diameter tube. This procedure converts the apparatus to an intralumen sump tube which avoids a vacuum and gives constant drainage, but at a slower rate than when the outer tube is used as the suction channel. It also changes the point of maximum suction from the uppermost openings to near the end of the tube. Changing this point from time to time is an obvious advantage in helping to prevent blocked-off loops behind the tube. The efficiency of the tube can be demonstrated easily by clamping off the small tube and noting the decreased amount of drainage.

---

[1] Levin, A. L.: New Gastroduodenal Catheter, J. A. M. A. **76**: 1007 (April 9) 1921.

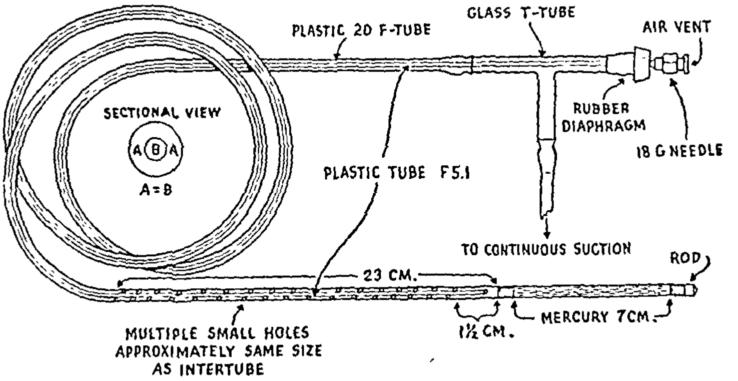
[2] Wangensteen, O. H.: Early Diagnosis of Acute Intestinal Obstruction with Comments on Pathology and Treatment, with Report of Successful Decompression of 3 Cases of Mechanical Bowel Obstruction by Nasal Catheter Suction Siphonage, West. J. Surg. **40**: 1, 1932.

[3] Miller, T. G., and Abbott, W. O.: Intestinal Intubation: Practical Technique, Am. J. M. Sc. **187**: 595, 1934.

[4] Cantor, M. O.: New Simplified Intestinal Decompression Tube, Am. J. Surg. **72**: 137, 1946.

[4a] Manufactured by G. P. Pilling and Son, Philadelphia.

In the operation of this tube it is necessary to have continuous motor suction such as that supplied by a Gomco thermatic pump or a Stedman pump; a water-bottle-drainage type of suction is not feasible, since there would be a constant flow of water from the top to the bottom bottle.



Drawing of new tube for use in the treatment of intestinal obstruction, showing the tube-within-a-tube that provides an air vent to prevent mucosa from being drawn into the perforations in the tube.

I believe that the efficiency of a tube is not necessarily increased by increasing the size of the openings. Experimental work with intestines of freshly slaughtered cows has indicated that the most efficient tube is one in which the diameter of the small tube is one-third the diameter of the large tube and the perforations are the same size as the small tube. My experience suggests that tubes 6 ft. (183 cm.) long or shorter are adequate for relief of small bowel obstruction and are more efficient than the longer tubes.

Passage of this tube through the pylorus is greatly facilitated, I believe, by the rapid emptying of the dilated stomach and hastened return of peristalsis in the stomach. As an additional aid I have recently been adding a mercury or lead weight to the tip of the tube. I have accomplished this by using a mercury or lead-filled insert to fill completely the diameter of the tube for about 7.5 cm. on the distal end, which is closed off with a tightly fitted plastic plug. The perforations then begin about 1.5 cm. above the insert. The plastic plug and the 1.5 cm. o unperforated tubing serve as a protection to a styl which can be used with far greater safety than with a tube available previously. It has been my experien that this tube frequently passes through the pylorus in the duodenum without special procedures. However, a long as the tube is removing large quantities of fecal-typ material, I am not particularly concerned with wheth or not it has passed the pylorus. Formerly, much tim was lost in waiting for one of the long tubes to pass an adequate amounts of obstructed material were not removed during the period of waiting.

Nurses can tell at a glance through the plastic tube an glass connection that the tube is working, moving eith gas or liquid. If nothing is being moved, the nurse ha only to pull on the syringe a couple of times to open u one of the passageways. When a Y-tube is inserted int the suction channel, a 30 cc. syringe can be left attache all the time, and the tube going to the trap bottle can b clamped off when the nurse wishes to inject air or wat into the tubes. Routine orders are to inspect the tub every hour and inject 30 cc. of water and 90 cc. of a if the tube is not functioning.

In two cases of my limited series, 6,000 cc. of draina was obtained within a 24-hour period. In several cas about 3,000 cc. was removed. Heretofore 1,000 to 1,5 cc. was the most I was able to remove in 24 hours. T most rapid drainage is obtained when the tube is used the air-vent type. However, I have found it advantage to change it over to the sump type by applying the su tion to the small tube as soon as the drainage has chang from the brown, fecal type to a clear, bile-tinged flu In this way gas continues to be removed, but liquid drained off at a slower rate. The change in the charac of the drainage can be determined best by examinin fresh specimen rather than the drainage in the trap bot

A modification of this tube, which will be describe detail elsewhere, is used as an aid in preventing spill of esophageal, gastric, or jejunal secretions during e phagectomies and gastrectomies. The tube used for t purpose is also an aid in preventing regurgitation aspiration of gastric contents, especially during em gency procedures. Culver[5] has recently shown how quently this occurs even in patients with an indwell gastric tube.

There are many other applications of this principle drainage. A rectal tube with a balloon of the kind co monly used by radiologists for giving a barium en can easily be converted into an air-vent or sump t As such it is extremely useful in the management of i after the mechanical obstruction is removed or in c of paralytic ileus. By this method the patient can be gi enemas or frequent, warm saline colon irrigations w out disturbing him. Studies are being carried out to whether this type of rectal tube with the suction clam off might be used to replace some of the fluids remo from the intestines above the obstruction.

Studies on the effect of removing such large amo of fluid on the water and chemical balance of the b are also being conducted.

610 Church St.

---

[5] Culver, G. A.; Makel, H. P., and Beecher, H. K.: Frequency of Aspiration of Gastric Contents by Lungs During Anesthesia and Surgery, Ann. Surg. 133: 289, 1951.

TECHNIQUE FOR THE DIAGNOSIS OF UNDESCENDED TESTIS

Ralph H. Kunstadter, M.D., Chicago

The frequency with which the diagnosis of undescended testis is erroneously made has prompted this report on the technique that I have used for many years. This method has been adopted by the various members of the Children's Endocrine Clinic and is being taught to interns and residents in Sarah Morris Hospital.

The patient is examined in the upright position, with the examiner sitting in a chair or on a stool facing the patient. For examining the right inguinal region, the left hand of the examiner is placed over the right buttock of patient for support. The thumb of the right hand is placed above the region of the right internal inguinal ring and is held firmly in place (Fig. 1). Then the right index finger is inserted into the inguinal canal, and the canal is explored up to the abdominal inguinal ring (Fig. 2). In exploring the left inguinal canal, the hands are reversed.

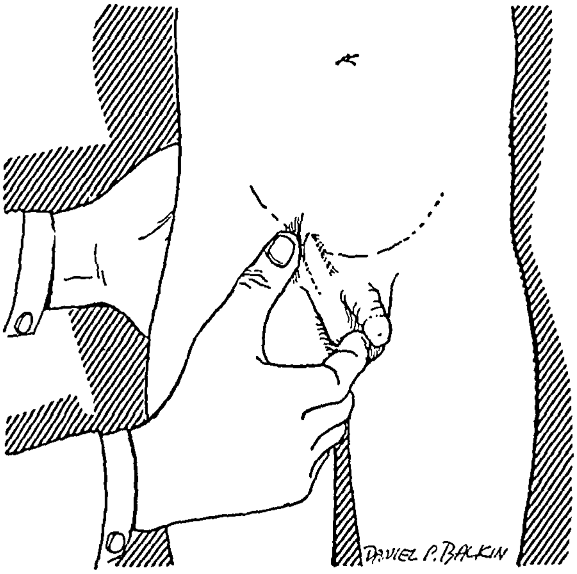


Fig. 1.—Initial position of hands for examination of right inguinal region, with patient standing, left hand on buttocks, and right hand placed over region of abdominal inguinal ring.

If the testis is not intra-abdominal, it may be palpated between the thumb and index finger. The mobility of the testis may be determined by a "stripping" maneuver (Fig. 3). If the testis is fixed, downward stripping will not accomplish placement of the testis into the scrotum. If the testis is mobile or "migratory," it may be manipulated into the scrotum by moving the thumb and index fingers downward in their original relationship, both fingers being in contact with the testis. On release of the fingers, the testis usually retracts immediately to its original position.

By use of this method, the following aims can be accomplished: (1) determination of the presence or absence of the testis in the inguinal canal; (2) determination of the relative size and consistency of the testis; (3) differentiation of true cryptorchidism from pseudocryptorchidism (migratory testis) and the degree of mobility of the testis; and (4) determination of the presence or absence of coexisting hernia.

It is believed that a careful examination such as described often is necessary to eliminate erroneous diagnoses of undescended testis, thereby reducing the frequency with which hormone therapy is unjustifiably administered.

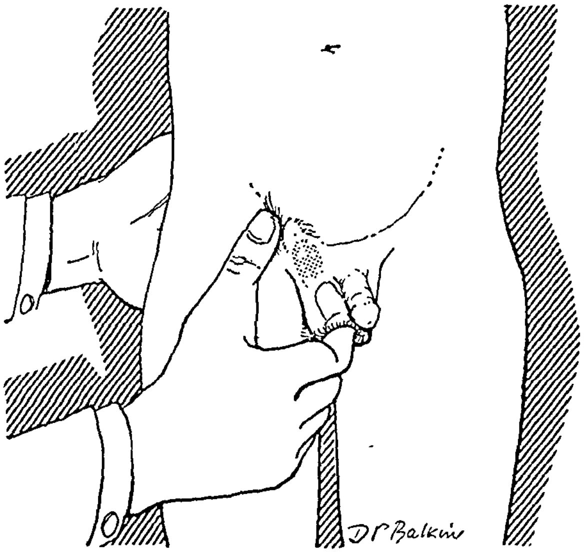


Fig. 2.—Technique for insertion of finger into inguinal canal and palpation of testis between thumb and index finger.

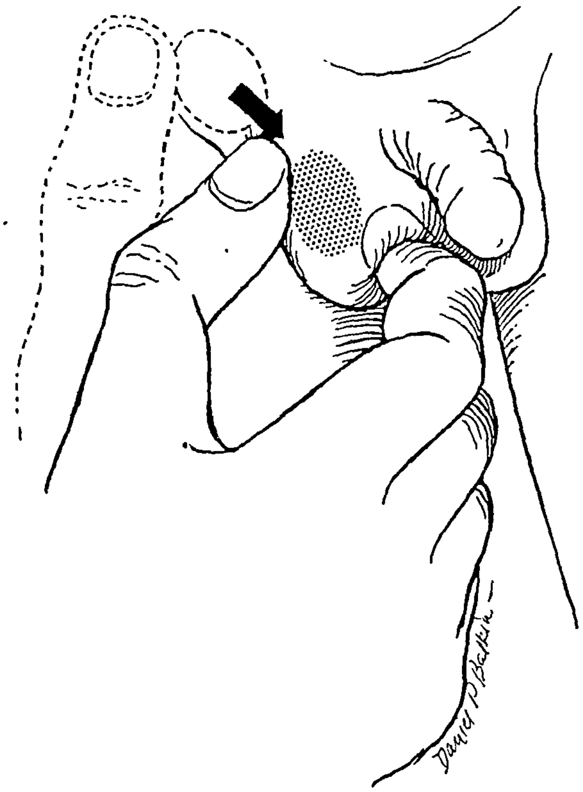


Fig. 3.—Mobility of testis is determined by "stripping" testis downward into the scrotum between the thumb and index finger.

104 S. Michigan Blvd.

From the Children's Endocrine Clinic, Michael Reese Hospital.

CLINICAL VALUE OF THE PALMOMENTAL REFLEX

Burton August, M.D.
and
Robert B. Miller, M.D., New York

The palmomental reflex consists of a unilateral (occasionally bilateral) contraction of the mentalis and orbicularis oris muscles elicited by a brisk scratch applied to the thenar eminence of the ipsilateral hand.

First described in 1920 by Marinesco and Radovici,[1] it has received more attention as a clinical curiosity than as a helpful diagnostic sign. Early workers utilized it as a means of determining the integrity of the lower motor neurone fibres of the facial nerve. Blake and Kunkle[2] expressed the opinion that it is a "normal reflex," that is, a wince reflex normally associated with a painful stimulus in subjects without pathology.

Recent work by Thompson[3] suggested to us that, if somewhat refined, this test might serve as a useful diagnostic aid. Thompson noted that the palmomental reflex was present in 100% of an unstated number of cases of general paresis, and that it appeared as early or earlier than perioral tremor. He also reported that it was present in about one-half of his patients with multiple sclerosis, but in only 2% to 3% of the general population. The latter was evidenced by testing "many normal persons without known neurological lesions."

In an attempt to extend and refine these observations we arbitrarily graded the reflex response as follows: 0, no observable response; 1+, barely perceptible exhaustible flicker; 2+, perceptible, easily exhaustable; 3+, gross movement, slowly exhaustible; 4+, gross movement, inexhaustible. Reactions graded as 1+ or 2+ are considered positive but not significant, while 3+ and 4 reactions are considered positive, hyperactive, and s nificant.

Using this criteria, a preliminary study was made 482 subjects classified as: normal (200), psychoneurc (70), psychotic without organic disease (70), orga behavioral disorders (27), encephalopathies (70), m lopathies (40), and idiopathic epilepsies (5). It v apparent from this study (Table 1) that a signific 3+ or 4+ palmomental reflex was extremely comm in the organic cerebral disorders (encephalopathie and was most infrequent (1) if the organic disorder v in the spinal cord below the seventh cervical segme (2) if no organic disorder was to be expected fr examination of the patient; or (3) if the subject v normal.

From these observations it would appear that a s nificant palmomental reflex is a reasonably reliable in

TABLE 1.—*Clinical Significance of Palmomental Reflex in 482 Subjects*

Patient Classification	Number Tested	Significant Palmomental Reflex	Patients Affected, %	Comment
Normal	200	5	2.5	4 patients gave a history of head injuries or meningitis
Idiopathic epilepsy	5	0	0	
Psychosis without organic disease	70	1	1.4	1 patient with paranoid dementia praecox had an 11-year history and head trauma 8 years before (after dementia praecox diagnosis was established)
Psychoneurosis	70	2	2.8	
Clinical pathological changes in cord below level of 7th cervical segment	40	1	2.5	
Clinical pathological changes intracranially	70	64	91	2 patients had palsy of the peripheral 7th cranial nerve; 4 patients had Unverricht's myoclonus epilepsy; none had palmomental reflex
Postencephalitic behavior disorders	5	5	100	
Pathology immediately following E. C. T.*	11	11	100	None had a positive palmomental reflex prior to E.C.T.
Organic psychosis	11	11	100	

* Electric convulsive therapy.

TABLE 2.—*Distribution of Palmomental Reflex in Various Age Groups* *

Patient Classification †	Number Tested	Age Distribution	Significant Palmomental Reflex	Patients Affected, %	Comment
Normals	40	20-45	2	5	1 normal patient had had severe head trauma
Primary behavior disorders	22	13-16	0	0	
Psychosis with organic disease	7	13-16	4	57	
Schizophrenia	69	20-45	7	10.1	5 had E.C.T.; 1 had epilepsy and E.C.T.; 1 had *Friedreich's ataxia*
Psychosis with epilepsy	49	20-45	7	14	
Post-topectomy	39	20-25	21	53	
Senile psychosis	71	Over 50	53	74	
General hospital patients without encephalopathy	50	Over 50	50	100	

* Physicians tested all patients without any foreknowledge of their diagnoses.
† Diagnoses used were those established at the regular staff conference.

Dr. Theodore J. C. von Storch aided in this study.

From the Division of Neuropsychiatry, Montefiore Hospital, New York, and Rockland State Hospital, Orangeburg, N. Y.

Assistant in the Division of Neuropsychiatry, Montefiore Hospital, New York, and Senior Psychiatrist, Rockland State Hospital, Orangeburg, N. Y. (Dr. August). Adjunct Attending Physician, Montefiore Hospital, New York, and Associate Neurologist, Kings Park State Hospital, Kings Park, N. Y. (Dr. Miller).

[1] Marinesco, G., and Radovici, A.: Sur un réflexe cutane nouveau: Réflexe Palmo-Mentonnier, Rev. neurol. **27**: 237, 1920.

[2] Blake, J. R., and Kunkle, E. C.: The Palmomental Reflex: A Physiological and Clinical Analysis, A. M. A. Arch. Neurol. & Psychiat. **65**: 337 (March) 1951.

[3] Thompson, G. N.: The Palmo-Mental Sign, Bull. Los Angeles Neurol. Soc. **10**: 174, 1945.

cation of an encephalopathy. Just what pathways the impulses follow from the fifth cervical segment to the lower motor neurones of the seventh cranial nerve is not yet known. Neither is it known why it should be exaggerated in certain disorders. These questions await further investigation. Nevertheless, the reflex can be of value to the clinician.

Since the palmomental reflex has reportedly been present in a high percentage of infants,[2] an effort was made in a second group of 347 subjects to correlate it with various age groups. These observations are summarized in Table 2, from which it would appear that this reflex may be produced by cerebral disorders or the process or aging.

Just as Babinski's reflex may be a normal finding in infants, the appearance of a hyperactive palmomental reflex in the older age groups may be due to normal cerebral aging, as well as to organic cerebral disease. No correlation was observed between the palmomental reflex and Babinski's reflex or its confirmatory signs. It is, therefore, as yet unknown whether or not it is a pyramidal sign.[4]

Hence, the palmomental reflex is of value to the clinician in examinations of patients past infancy and under 50. In this period a significant reaction is strongly suggestive of organic central nervous system disease above the seventh cervical segment. We are unable at this time to give a satisfactory explanation of the anatomy or physiology of this reflex. Appropriate studies are in process elsewhere.[2]

CONCLUSIONS

The presence of a hyperactive palmomental reflex in a patient past infancy and under the age of 45 is virtually diagnostic of an intracranial disorder and is a dependable, easily obtainable and rapid sign indicating the advisability of a more complete neurologic work-up. (Obviously, disturbances of transmission from the point of stimulation to the seventh cranial nerve may prevent use of this reflex as an indication of an encephalopathy.) We feel that the reflex is of definite advantage not only to the neurologist, but also to the psychiatrist whose practice excludes neurology.

Montefiore Hospital for Chronic Diseases, 84 Gun Hill Rd. (Dr. August).

[4] Wechsler, I.: A Textbook of Clinical Neurology with an Introduction to the History of Neurology, ed. 6, Philadelphia, W. B. Saunders Company, 1947, p. 19.

Accident-Prone Persons.—The personality of these patients prone to recurring accidents is usually that of a young person outwardly restless, vivacious, immediate in his demands and action, not able to wait, impulsive, quick in judgment, often taking a chance, boastful, not taking pleasure in intellectual pursuits but very interested in athletics and in medical and health subjects as they affect the body. They are people who rebel early against parental authority and gain independence often at the cost of buried aggression and psychological guilt. A curious feature is that the more concerned they are with their body in the sense of fearing mutilation, the more the likelihood of "accidentally" injuring themselves. While often outwardly happy-go-lucky and sociable they are inwardly aggressive: in their childhood development nail biting, enuresis and occasional delinquencies are notable.—D. Cappon, M.D., Some Psychosomatic Aspects of Injuries, *The Canadian Medical Association Journal*, October, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

Lidocaine Hydrochloride (See New and Nonofficial Remedies 1951, p. 36).

Solution Xylocaine Hydrochloride 0.5%: 50 cc. vials. A solution containing 5 mg. of lidocaine hydrochloride and 8 mg. of sodium chloride in each cubic centimeter. Preserved with 0.1% methylparaben. Astra Pharmaceutical Products, Inc., Worcester, Mass.

Solution Xylocaine Hydrochloride 1%: 20 cc. and 50 cc. vials. A solution containing 10 mg. of lidocaine hydrochloride and 7 mg. of sodium chloride in each cubic centimeter. Preserved with 0.1% methylparaben. Astra Pharmaceutical Products, Inc., Worcester, Mass.

Solution Xylocaine Hydrochloride 2%: 50 cc. vials. A solution containing 20 mg. of lidocaine hydrochloride and 6 mg. of sodium chloride in each cubic centimeter. Preserved with 0.1% methylparaben. Astra Pharmaceutical Products, Inc., Worcester, Mass.

Solution Xylocaine Hydrochloride 2% with Epinephrine Hydrochloride 1:50,000: 50 cc. vials. A solution containing 20 mg. of lidocaine hydrochloride, 0.02 mg. of epinephrine hydrochloride and 6 mg. of sodium chloride in each cubic centimeter. Preserved with 0.1% methylparaben. Astra Pharmaceutical Products, Inc., Worcester, Mass.

Methamphetamine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1951, p. 193).

Solution Doxyfed: 473 cc. and 3.78 liter bottles. A flavored aqueous solution containing 1.5 mg. of methamphetamine hydrochloride in each cubic centimeter. Raymer Pharmacal Company, Philadelphia.

Tablets Doxyfed: 2.5 mg. and 5 mg. Raymer Pharmacal Company, Philadelphia.

Cod Liver Oil Concentrate Tablets (See New and Nonofficial Remedies 1951, p. 465).

Tablets Cod Liver Oil Concentrate with added Vitamin D_3: Each tablet has a potency of not less than 3,120 U.S.P. units of Vitamin A and of not less than 312 U.S.P. units of Vitamin D. White Laboratories, Inc., Kenilworth, N. J.

Estrone-U.S.P. (See New and Nonofficial Remedies 1951, p. 333).

Aqueous Suspension Estrone: 10 cc. vials. A suspension containing 2 mg. (20,000 I. U.) and 5 mg. (50,000 I. U.) of estrone in each cubic centimeter. E. S. Miller Laboratories, Inc., Los Angeles.

Chloramphenicol-U.S.P. (See New and Nonofficial Remedies 1951, p. 118).

Ophthalmic Ointment Chloromycetin 1%: 56.7 gm. tubes. An ointment containing 10 mg. of chloramphenicol in each gram. Parke, Davis & Company, Detroit.

***p*-Aminosalicylic Acid** (See New and Nonofficial Remedies 1951, p. 89).

Powder Para-Aminosalicylic Acid: Bulk; for manufacturing use. Chemo Puro Manufacturing Corporation, Long Island City, N. Y.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

PROPHYLAXIS OF OPHTHALMIA NEONATORUM

There have recently appeared in various lay magazines several articles and short comments adversely criticizing the Credé silver nitrate prophylaxis for ophthalmia neonatorum and advocating some form of antibiotic prophylaxis, usually penicillin, in the medium of an ophthalmic ointment. The various arguments for and against both silver nitrate and penicillin prophylaxis have been reviewed by various committees of ophthalmologists and have been the subject of clinical investigation in several obstetric clinics. The net result of these reports and investigations is that, although the experiences in various obstetric clinics clearly indicate that a penicillin prophylaxis, administered under proper control, is the equal of and in some respects superior to the established silver nitrate procedure, nevertheless no radical change in the existing laws or regulations requiring the silver nitrate rophylaxis should be recommended at this time.

The Credé method consists of a thorough cleansing of the newborn infant's eyes, the instillation of one drop of a 1 per cent solution of silver nitrate in each conjunctival sac, and after one to two minutes the irrigation of the eyes to remove the silver nitrate and any desquamated epithelium. Prior to the introduction of this prophylaxis in 1882, the incidence of ophthalmia neonatorum in the Leipzig Lying-In Hospital was 10.8 per cent and was reported to be over 10 per cent in other obstetric clinics throughout the world. Similarly, the incidence of blindness from ophthalmia neonatorum in 22 German asylums was 30 per cent in 1876. After the introduction of the Credé method, the incidence of ophthalmia neonatorum in the Leipzig institution and other obstetric clinics fell to less than 1.0 per cent, and the incidence of blindness from ophthalmia neonatorum in the blind asylums fell proportionately. At present, ophthalmia neonatorum is a relatively rare complication of childbirth in the United States. Some form of prophylaxis against ophthalmia neonatorum is now required by either law or regulation in all 48 states and the District of Columbia. In 32 states the laws or regulations specify the silver nitrate method, while in only one state is penicillin mentioned as an alternate procedure.

The opponents of the silver nitrate prophylaxis and proponents of the penicillin method argue that in 50 per cent of the infants treated with silver nitrate chemical conjunctivitis later develops, which, while not serious, is disturbing; that stock solution of silver nitrate may evaporate to the extent that the solution used may become dangerously strong and may actually cause organic damage to the cornea; occasional mistakes such as the use of a 10 per cent solution instead of the proper 1 per cent solution have been made and as a result the infant so treated is permanently blinded; penicillin prophylaxis is equally efficacious in the prevention of ophthalmia neonatorum and carries with it none of the above objections; and that the net value of the silver nitrate procedure lies in the preliminary cleansing of the eye, which is real asepsis, and that the use of strong chemicals such as silve nitrate harks back to Listerian antisepsis.

The ophthalmologists and obstetricians opposing a abandonment of the silver nitrate prophylaxis at this tim argue that, while 1 per cent silver nitrate does cau chemical conjunctivitis in a high percentage of case such conjunctivitis is trivial, and, in hundreds of tho sands of cases in which it has been used, there is record that a properly performed Credé prophylaxis h done any harm to the infant's eyes. It has been proved be an effective prophylaxis against ophthalmia neor torum. They further argue that the danger of evaporati or use of a wrong solution is completely obviated by t use of the modern wax ampules and that no possi change of laws or regulations can save an ignorant careless physician from the results of his folly. While penicillin prophylaxis is equally efficacious in prevent ophthalmia neonatorum, the ointments or soluti should be kept on ice, and even then they may deterior in time. Thus, unless properly preserved and renewed, penicillin may become inactive. Further, they point to possibility of sensitization to penicillin and empha that neither silver nitrate nor penicillin is effective aga the virus of inclusion blenorrhea. Finally they claim in all probability some new antibiotic will be found will be effective against both the Gonococcus and virus and that therefore the time is not yet ripe for rec mendations for a change in the already existing laws regulations.

While there is much truth in both sides of the con versy, the weight of the argument appears to oppose abandonment of silver nitrate. There is no doubt tha use of penicillin by parenteral injection in the mothe fore birth of the infant, in the baby immediately birth, or, preferably, by topical application of penic ointment (100,000 units per gram) in the eyes of newborn infant, all effectively prevent ophthalmia natorum and eliminate the later troublesome chen conjunctivitis. It is equally true that there is more da of an improperly preserved or old penicillin ointmen coming ineffective than there is of deterioration of th ver nitrate in the modern wax ampules. The dang sensitization of the infant by one application of peni ointment is so slight it may be dismissed. Present in gation indicates that there is hope that some new an otic may have a sufficiently wide spectrum to be effe against both the Gonococcus and the virus of incl blenorrhea. Thus, while there can be no possible o tion to the use of penicillin prophylaxis in hospital cl where its use is well controlled, it would appear tha specific recommendations for changes in the state or regulations would at this time be premature. It is, ever, quite possible that further investigations will permit firm recommendations for a prophylaxis with an antibiotic with a wider spectrum than is possessed by penicillin and without the objections that can now be made against the penicillin procedure.

ARTERIOVENOUS PULMONARY FISTULA

Hereditary hemorrhagic telangiectasia, or Rendu-Osler-Weber disease, is an uncommon but well-established clinical entity characterized by multiple telangiectasias, hemorrhages, and hereditary transmission. The lesions are commonly seen on the face, the lips, and the mucosa of the nose, lips, mouth, and the gastrointestinal tract. Telangiectasias may also involve various viscera. The literature contains only occasional reference to pulmonary involvement, which is usually discovered postmortem. Bowers [1] reported in 1936 the death of a newborn child caused by hemorrhage from a ruptured pulmonary hemangioma. Rodes,[2] in 1938 reported what appears to be the first case of hemangioma of the lung associated with secondary polycythemia. His patient had cyanosis, clubbed fingers and toes, and polycythemia. The red blood cell count was 7,540,000 and the hemoglobin 118%. The patient died from a massive pulmonary hemorrhage, and the postmortem revealed two hemangiomas in the right lung and one in the left. Smith and Horton reported a similar case in a man of 47.

Hepburn and Dauphinee [3] are credited with having performed the first pneumonectomy in a girl, 23, with polycythemia and an infiltrating lesion of the lung. The lung contained a large angiomatous mass in the midportion of the lower lobe. Immediately after the operation, there was disappearance of cyanosis, a more gradual disappearance of clubbing of the digits, and pronounced improvement in general health. Janes [4] reported a man of 30 with cyanosis, multiple small hemangiomas on the lower lip, and a history of coughing up bright blood. Radiographs showed two shadows in the right lung and one in the left. There was a blowing murmur in the region of the cardiophrenic angle. The right side was operated upon first, and two hemangiomatous lesions were removed by local excision. Six months later two lesions in the left lobe were excised.

Subsequent reports by Goldman,[5] Jones and Thompson,[6] Adams and his co-workers,[7] of Burchell and Clagett,[8] and of Makler and Zion [9] have contributed to the formulation of a comprehensive picture of this interesting entity. The symptoms, signs, and the course of the condition in all of the reports were sufficiently similar for a clinical entity of cavernous hemangioma or arteriovenous fistula of the lung with secondary polycythemia to be established. The patients showed the characteristic triad of cyanosis, clubbing of the fingers and toes, and polycythemia. Other symptoms were dizziness, headache, faintness, thickness of speech, fatigue, and dyspnea on exertion. The arterial blood showed low oxygen saturation. A striking negative finding was the absence of signs of cardiac disease. The cyanosis that occurs in these cases is due to the shunt effect of the tumor, which deviates blood from the pulmonary artery into a pulmonary vein without transmission through the alveolar capillaries. The clubbing of the digits and the polycythemia develop as secondary manifestations of systemic anoxemia. The polycythemia is a compensating mechanism, an attempt on the part of the hematopoietic system to compensate for the anoxemia. The blood picture differs from that in primary polycythemia by the absence of basophilic stippling and by the absence of immature white cells.

A constant radiological finding is that of one or more nonprogressive pulmonary lesions that are seen as round masses, and which on fluoroscopic examination may be seen to pulsate. A continuous murmur, loudest at inspiration and fading out at expiration, may be heard over the lesion.

The lesions described are probably all congenital and in some cases hereditary. They represent developmental abnormalities of capillaries, small venules, and small arterioles. The pathological changes are those of a distended afferent artery and distended efferent veins. Between the arterial and venous system there is either a direct communication through one or several larger vascular trunks or a network of distended vessels instead of capillaries. Degenerative changes develop in the walls and may lead to rupture.

Moyer and Ackerman [10] state that of the 15 cases reported in the literature up to 1948, association with hereditary hemorrhagic telangiectasias was demonstrated in only 3, although 9 patients had telangiectasias of the nose, face, or lips. They reported a family with hemorrhagic hereditary telangiectasias, two members of which had visceral involvement consisting of pulmonary arteriovenous fistula.

Treatment of arteriovenous pulmonary fistula is essentially surgical. In view of the modern advances in thoracic surgery, it presents no difficulties. Eradication of the fistula may be accomplished rarely, as in the case of Janes, by local excision and more commonly by a lobectomy or a pneumonectomy. Bisgard,[11] and Hepburn and Dauphinee and others stress that surgical intervention is indicated in these cases, even in the absence of incapacitating symptoms, because of the hazard of a fatal pulmonary hemorrhage or of thrombotic sequelae due to polycythemia.

The steadily increasing number of cases reported suggests that the condition is much commoner than has been supposed. Awareness of the picture should lead to a more frequent diagnosis of the condition.

---

[1] Bowers, W. F.: Rupture of Visceral Hemangioma as Cause of Death, with Report of Case of Pulmonary Hemangioma, Nebraska M. J. **21**: 55 (Feb.) 1936.

[2] Rodes, C. B.: Cavernous Hemangiomas of Lung with Secondary Polycythemia, J. A. M. A. **110**: 1914 (June 4) 1938.

[3] Hepburn, J., and Dauphinee, J. A.: Successful Removal of Hemangioma of Lung Followed by Disappearance of Polycythemia, Am. J. M. Sc. **204**: 681 (Nov.) 1942.

[4] Janes, R. M.: Multiple Cavernous Haemangiomas of Lungs Successfully Treated by Local Resection of Tumours, Brit. J. Surg. **31**: 270 (Jan.) 1944.

[5] Goldman, A.: Cavernous Hemangioma of Lung: Secondary Polycythemia, Dis. of Chest **9**: 479 (Nov.-Dec.) 1943.

[6] Jones, J. C., and Thompson, W. P.: Arteriovenous Fistula of Lung: Report of a Patient Cured by Pneumonectomy, J. Thoracic Surg. **13**: 357 (Oct.) 1944.

[7] Adams, W. E.; Thornton, T. F., Jr., and Eichelberger, L.: Cavernous Hemangioma of Lung (Arteriovenous Fistula): Report of Case with Successful Treatment by Pneumonectomy, Arch. Surg. **49**: 51 (July) 1944.

[8] Burchell, H. B., and Clagett, O. T.: Clinical Syndrome Associated with Pulmonary Arteriovenous Fistulas, Including Case Report of Surgical Cure, Am. Heart J. **34**: 151 (Aug.) 1947.

[9] Makler, P. T., and Zion, D.: Multiple Pulmonary Hemangiomata, Am. J. M. Sc. **211**: 261 (March) 1946.

[10] Moyer, J. H., and Ackerman, A. J.: Hereditary Hemorrhagic Telangiectases Associated with Pulmonary Arteriovenous Fistula in Two Members of Family, Ann. Int. Med. **29**: 775 (Nov.) 1948.

[11] Bisgard, J. D.: Pulmonary Cavernous Hemangioma with Arteriovenous Fistula, Surgical Management: Case Report, Ann. Surg. **126**: 965 (Dec.) 1947.

ORGANIZATION SECTION

FACTS ABOUT A. M. A. DUES FOR 1952

The following information on membership dues for the American Medical Association for 1952 has been compiled by the office of the Secretary of the American Medical Association.

1. American Medical Association membership dues for 1952 are $25.

2. Fellowship dues for 1952 have been abolished.

3. American Medical Association membership dues are levied on "active" members of the Association. A member of a constituent association who holds the degree of Doctor of Medicine or Bachelor of Medicine and is entitled to exercise the rights of active membership in his constituent association, including the right to vote and hold office as determined by his constituent association, and has paid his American Medical Association dues, subject to the provisions of the By-Laws, is an "active" member of the Association.

4. American Medical Association membership dues are payable through the component county medical society or the constituent state or territorial medical association, depending on the method adopted locally.

5. Commissioned medical officers of the United States Army, the United States Navy, the United States Air Force or the United States Public Health Service, who have been nominated by the Surgeons General of the respective services, and the permanent medical officers of the Veterans Administration and the Indian Service, who have been nominated by their Chief medical Directors, may become Service Fellows on approval of the Judicial Council. Service Fellows need not be members of the component county or constituent state or territorial associations or the American Medical Association. They do not receive any publication of the American Medical Association except by personal subscription. If a local medical society regulation permits, a Service Fellow may elect to become an active member of a component and constituent association and the American Medical Association, in which case he would pay the same member-ip dues as any other active member and receive a subscription THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

6. An active member of the American Medical Association may be excused from the payment of American Medical Association membership dues when it is deemed advisable by the Board of Trustees, provided that he is partially or wholly excused from the payment of dues by his component society and constituent association.

The following may be excused in accordance with this provision: (*a*) members for whom the payment of dues would constitute a financial hardship as determined by their local medical societies; (*b*) members in actual training but not more than five years after graduation from medical school; (*c*) members who have retired from active practice; (*d*) members who have reached the age of 70, on request, and starting January 1 following the 70th birthday, and (*e*) members who are called to active duty with the armed forces (exemption begins July 1 or January 1 following entrance on active duty). The last two categories are excused from A. M. A. dues regardless of local dues exemptions.

7. Active members of the American Medical Association are not excused from the payment of American Medical Association membership dues by virtue of their classification by their local societies as "honorary" members or because they are excused from the payment of local and state dues. Active members may be excused from the payment of American Medical Association membership dues only under the provision described in paragraph 6 above.

8. American Medical Association membership dues include subscription to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Active member of the Association who are excused from the payment of dues will not receive THE JOURNAL except by personal subscription at the regular subscription rate of $15 a year.

9. Members may substitute one of the special journals published by the Association for THE JOURNAL to which they are entitled as members.

10. A member of the American Medical Association wl joins the Association on or after July 1 will pay membersh dues for that year of $12.50 instead of the full $25 membersh dues.

11. An active member is delinquent if his dues are not pa by June 1 of the year for which dues are prescribed and sh forfeit his active membership in the American Medical As ciation if he fails to pay the delinquent dues within thirty da after the notice of his delinquency has been mailed by the S retary of the American Medical Association to his last kno address.

12. Members of the American Medical Association who ha been dropped from the Membership Roll for nonpayment annual dues cannot be reinstated until such indebtedness been discharged, but such indebtedness shall apply only to one year of delinquency.

13. The apportionment of delegates from each constitu association shall be one delegate for each thousand (1,000), fraction thereof, *active members of the American Medical As ciation* as recorded in the office of the Secretary of the Ameri Medical Association on December 1 of each year.

SCIENTIFIC EXHIBIT, CHICAGO SESSION

Attention is called to the fact that applications for space the Scientific Exhibit at the Chicago Session of the Ameri Medical Association, June 9-13, 1952, will close on January *Applications should be sent immediately so that the Commi on Scientific Exhibit will have an opportunity to consider th Late applications will be placed on the waiting list to be c sidered by the Committee if space is available.*

Applications should be sent to the Director, Scientific Exhi American Medical Association, 535 N. Dearborn St., Chicago

WOMAN'S AUXILIARY CONFERENCE

The two-day, eighth annual conference of the presidents presidents-elect of the auxiliaries to the state medical socie and the committee chairmen of the Woman's Auxiliary to American Medical Association drew a registration of more t 150. The conference, held in Chicago Nov. 14-15, was b around the theme "Working Together for Health." Among many speakers during the conference were Auxiliary Presi Mrs. Harold F. Wahlquist, Minneapolis; Dr. Ernest B. How Assistant Secretary of the A. M. A.; Edward H. O'Con Chicago, managing director of the Insurance Economic Soc of America, and Dr. Walter Judd, Minneapolis, a membe the House of Representatives in Washington. Dr. Judd's ins ing speech will be published in the December Bulletin of Woman's Auxiliary. Mrs. Ralph Eusden, Long Beach, Ca President-Elect of the Auxiliary, presided at the confer sessions.

TWO HUNDRED ATTEND
SCHOOL HEALTH MEETING

More than 200 persons—educators, physicians, and pu health officials—from 36 states, the District of Colum Hawaii, Japan, and Israel, attended the Third National ference on Physicians and Schools, which was held recentl the Moraine Hotel in Highland Park, Ill. The conference sponsored by the Bureau of Health Education of the A. M Dr. W. W. Bauer, Bureau Director, told the gathering that purpose of the conference was to develop cooperative and e tive health services for school children. Many speakers t part in the two-day program, including Fred V. Hein, Ph health education consultant, and Dr. Donald A. Dukelow, m cal consultant, of the Bureau. Conference participants divided into five discussion groups, covering every phase of school child's health. Each division made a report which adopted by the conference. Several reports emphasized the portance of having the family physician conduct the he examinations of children whenever possible.

MEDICAL NEWS

ALABAMA

Personal.—Dr. Walter S. Parsons, Mobile, has been named a chevalier de la Légion d'Honneur by the French government in recognition of services rendered to the Allied cause during the two World Wars and particularly to the Free French Forces during the last conflict.

ARKANSAS

Annual Neuropsychiatric Meeting.—The fourth annual neuropsychiatric meeting of the Veterans Administration Hospital, North Little Rock, Ark., will be held there February 28-29. Among the guest lecturers will be Dr. Leo H. Bartemeier, president, American Psychiatric Association, Detroit, Mich.; Dr. Daniel Blain, medical director, American Psychiatric Association, Washington, D. C.; Vice-Admiral (retired) Joel T. Boone, chief medical director, Veterans Administration, Washington, D. C.; Dr. Paul C. Bucy, neurosurgeon, Chicago; Dr. D. Ewen Cameron, president-elect, American Psychiatric Association, Montreal, Canada; Dr. Edward H. Cushing, assistant chief medical director, Veterans Administration, Washington, D. C.; Dr. Edwin F. Gildea, head, department of neuropsychiatry, Washington University School of Medicine, St. Louis; O. Hobart Mowrer, Ph.D., research professor of psychology, University of Illinois, Urbana; Dr. Philip Thorek, surgeon, Chicago; and Dr. Harvey J. Tompkins, chief, psychiatry and neurology division, Veterans Administration, Washington, D. C. There will be also about ten clinical demonstrations and thirty technical exhibits concerned with the hospital itself. There will be no charge for registration, and attendance of all interested professional personnel will be welcomed. Information may be obtained from Dr. Ewin S. Chappell, Director of Professional Education, Veterans Administration Hospital, North Little Rock, Ark.

CALIFORNIA

Dedicate Research Building.—The $25,000 one story building built by the Alumni Research Foundation of the College of Medical Evangelists on the Loma Linda campus was dedicated November 25. Dr. Roger W. Barnes, Los Angeles, foundation president, presided at the exercises. Several alumni are helping the foundation to further research at the College of Medical Evangelists by assigning to the foundation all profits from the sale of medical instruments specially developed by them. The research shop will house machinery used in the manufacture of some of these instruments.

COLORADO

Metz Award Established.—The Colorado Society of Anesthesiologists has announced the creation of the C. Walter Metz Award. This award is to be given annually to a member of that society for outstanding achievement in the field of anesthesiology.

Dr. Sabin Honored.—Dr. Florence R. Sabin, Denver, was honored at recent ceremonies at which the new $1,000,000 cancer wing at the University of Colorado Medical Center was dedicated. The new wing will be known as the Florence R. Sabin Building for Research in Cellular Biology. Among the speakers at the dedicatory ceremonies was Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service. The ceremonies were held December 1-2, a few days after Dr. Sabin celebrated her 80th birthday, at which time her colleagues honored her at a dinner and presented her with a bound volume of felicitations from all parts of the country. Dr. Sabin has had a brilliant career as teacher, research worker, physician, counselor, and public health leader. She was recently awarded the General Rose Memorial Hospital's 1951 medal for distinguished public service. She is one of six honorary members of the Colorado State Medical Society.

FLORIDA

Lectures at Children's Cardiac Home.—Dr. Robert P. Grant, member of the National Heart Institute, Bethesda, Md., completed a series of lectures on "Spatial Vector Electrocardiography" to a group of Miami physicians December 17-21. The course was arranged and sponsored by the National Children's Cardiac Home.

ILLINOIS

Appointments to State Board of Health Advisors.—Four additional members have been appointed to the State Board of Public Health Advisors, an adjunct to the state department of public health. They are Dr. Frank J. Jirka, Chicago, former director of the state health department and clinical associate professor of surgery, University of Illinois; Dr. Charles O. Lane, West Frankfort, member of the council of the Illinois State Medical Society; Dr. Frank Garm Norbury, Jacksonville, and Miss Jessie F. Binford, Chicago, executive director of the Juvenile Protective Association. The four new positions on the board were created by House Bill 590, which was passed by the 67th General Assembly.

Chicago

Indigent Arthritic Patients to be Rehabilitated.—The Arthritis and Rheumatism Foundation, Illinois Chapter, has announced in connection with its $350,000 drive for funds in Illinois that 60% of the funds raised in Chicago will be used to give aid medically and financially to the indigent victims of arthritis and rheumatism in Chicago. It is the first time, according to the foundation, that these sufferers will be aided through the Illinois Chapter. It has established 11 clinics in the city for indigent patients. Each applicant will be placed under the care of a special team consisting of a physician, therapist, rheumatologist, orthopedist, medical social worker, and a nurse. As each wage earner is rehabilitated another will be investigated. Forty per cent of the funds collected locally will go to the national foundation for research.

INDIANA

Lions Club Gift to University.—Members of the Lions Clubs of Indiana attended an open house held in the Indiana University School of Medicine department of radiology, Indianapolis, on December 2. State officers of the Lions and trustees of the Lions Club Cancer Control Fund were guests at a luncheon preceding the afternoon program. The affair was arranged in recognition of the activities of Indiana Lions in underwriting the purchase of x-ray equipment, including the million-volt unit. The clubs pledged $50,000 to equip the department, and about $42,000 of that amount has been paid.

MARYLAND

New System to Correct Birth Records.—The bureau of vital records of the Baltimore City Health Department on October 18 closed the first year of its birth record correction advisory service. The names of a number of residents of Baltimore, especially children, do not match their birth certificates and could some day result in tax mix-ups and loss of inheritances and social security benefits. A new system was developed last year by the bureau of vital records in cooperation with the legal aid bureau. Confidential sessions are held from 5 to 7 p. m. on the second and fourth Wednesday of each month. Problems involving names in questions of legitimacy and paternity of more than a hundred persons have been straightened out, and the bureau has handled other changes in the records resulting from

---

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

adoptions, legal changes of name, and previously unrecorded births. A special feature of the service is the opportunity given unwed parents, under certain conditions, to give the father's surname to their issue without court action.

MASSACHUSETTS

Appoint Assistant Dean.—Dr. David McLean Greeley, Princeton, N. J., has been appointed assistant dean at Boston University School of Medicine. He will also take charge of admissions and student relations at the school of medicine and will be active on the staff of the Massachusetts Memorial Hospitals as a member of the medical associates. Dr. Greeley succeeds Dr. Francis C. Lowell, who will continue teaching and research on allergy at the school of medicine and at the Massachusetts Memorial Hospitals, Boston. From 1941 until his recent appointment Dr. Greeley was an instructor in pediatrics at Columbia University, New York. He has also been assistant attending pediatrician at Babies' Hospital, New York, and chief of the pediatric cerebral palsy clinic of that hospital; attending pediatrician at St. Francis Hospital, Trenton, N. J.; attending pediatrician at the House of St. Giles the Cripple, Garden City, N. Y., and pediatric consultant of the United Cerebral Palsy Association's Chestnut Hill Project in Pennsylvania. Dr. Greeley is the third member of the family doing medical work in Boston. Dr. Hugh Payne Greeley, the father, is doctor of internal medicine at Boston's Lahey Clinic, and Dr. Hugh McLean Greeley is interning at the Massachusetts Memorial Hospitals.

MICHIGAN

Surgical Chief Retires.—Dr. Frank C. Witter was honored by the surgical staff of the Highland Park General Hospital at a dinner November 28 commemorating his retirement as chief of the surgical department of the hospital, a position he has held for 30 years. He will continue in the private practice of surgery.

Paul De Kruif Made Honorary Member of County Society.—Paul de Kruif, Ph.D., was made an honorary member of the Ottawa County Medical Society at its regular meeting December 7 in the city of Holland, at which time the following resolution was passed:

> WHEREAS, Dr. Paul de Kruif, a native son of Ottawa County, born in eland, Michigan, has brought fame to himself and to this community his outstanding ability as a medical writer, and
>
> WHEREAS, Dr. Paul de Kruif has distinguished himself for his services d attainments in medicine and the allied sciences, and
>
> WHEREAS, Dr. Paul de Kruif has rendered other services of unusual value to organized medicine and the medical profession, be it therefore
>
> *Resolved*, That Dr. Paul de Kruif be elected as an honorary member to the Ottawa County Medical Society.

Course on the Acoustical Spectrum.—The School of Public Health of the University of Michigan, Ann Arbor, in collaboration with the Institute of Industrial Health, will offer a course on the "Acoustical Spectrum, Sound—Wanted and Unwanted," February 5-8 under the chairmanship of Dr. Carey P. McCord. The course will include material on sound, sonics, biophysics of sound perception, effects of sound, and sound control. The course is given to serve public health, industrial health and safety personnel, industrial management and municipal officials, industrial physicians, otologists, and general practitioners. The enrollment fee of $10 should be submitted with application for enrollment to H. E. Miller, School of Public Health of the university.

MINNESOTA

Dr. Lundy to be Guest Editor of *Lancet*.—Dr. John S. Lundy, head of the department of anesthesiology of the Mayo Clinic, Rochester, has been named guest editor of *The Journal Lancet* for the February, 1952, issue. Dr. Lundy plans to devote the entire issue to the subject of pain.

Phi Delta Epsilon Lecture.—This annual lecture, presented at the University of Minnesota, Minneapolis, will be given in the auditorium of the Museum of Natural History at 8:15 p. m. February 14. Dr. Charles P. Bailey of Philadelphia will discuss "Recent Advances and Future Trends in Cardiac Surgery." All physicians and medical students are invited to attend.

NEW YORK

Brooklyn Aftercare Clinic.—A new aftercare clinic in Brooklyn to centralize service to convalescent patients from several institutions is now operating on a limited schedule. The clinic, which will contain 11 consultation offices, a group therapy center, and general office space, is at 153 Pierrepont St. The service is similar in organization and facilities to the Manhattan Aftercare Clinic, which has been in operation since 1944. The new clinic serves convalescent patients from Kings Park, Pilgrim Central Islip, and Creedmoor state hospitals, Letchworth Villag and Wassaic State School, and other institutions needing th service. It will provide psychiatric and social service, each participating institution conducting its own clinics at stated time with its own personnel. The clinic will be open daily and evenings as needs of the patients indicate.

New York City

Joint Meeting of Tuberculosis and Heart Societies.—A join meeting of the Tuberculosis Sanatorium Conference of Metropolitan New York and the New York Heart Association will b held at 8:30 p. m. January 22 in Hosack Hall of the New Yor Academy of Medicine. The following program will be presente

Irving S. Wright, Diagnosis and Treatment of Pulmonary Infarction.
Charles T. Dotter, Angiocardiography in Diagnosis of Mediastin Masses.
Herbert C. Maier, Surgical Treatment of Tuberculous Pericarditis.

Personals.—Dr. Edward H. Mandel has been appointed assista clinical professor of dermatology at the New York Medic College-Flower and Fifth Avenue Hospital.——A dinner honor of Dr. Clarence P. Oberndorf on the occasion of his 70 birthday will be given him by his friends and colleagues t evening of February 15 at the Waldorf-Astoria in New Yor ——Dr. Fred W. Stewart lectured to staff members of t Armed Forces Institute of Pathology, Washington, D. C., December 11 and 13 on "Spontaneous Involution of Cancer a Cancer of the Breast."

OHIO

County Society Anniversary.—The 80th anniversary of t founding of the Mahoning County Medical Society is to celebrated January 15. A banquet on that date at the Young town Country Club will honor all living past presidents of t society.

TEXAS

Drs. Cori to Give First Bodansky Lecture.—The Meyer Boda sky Lectures at the University of Texas Medical Branch, G veston, will be inaugurated by Dr. and Mrs. Carl F. Cori, Washington University School of Medicine, St. Louis, on Feb ary 13. The Meyer Bodansky Lectureship was established by group of Galveston business men in memory of the late I Meyer Bodansky, who was professor of pathological chemis at the University of Texas Medical Branch from 1926 to death. Dr. Carl F. and Dr. Gerty T. Cori received the Nol Prize in 1947 for their contributions on carbohydrate me bolism.

GENERAL

Personal.—Dr. Martha Eliot, chief of the United States Cl dren's Bureau, received the American Woman's Associati Award for Eminent Achievement December 9, in recognition her "spirit of leadership and career of service to others."

Masonic Fund for Research on Dementia Praecox.—The Sc tish Rite Masons of the Northern Jurisdiction have appropria $70,000 for study on dementia praecox, on which they ha spent over a million dollars since 1935. The fund will be us this year.

Death of Dr. Irwin.—Robert B. Irwin, LL.D., Port Orcha Wash., retired executive director of the American Foundati for the Blind, died at his home December 12, aged 68, of a he attack. He had been executive director of the American Foun tion for the Blind from 1929 to 1950. Dr. Irwin had been bli since the age of 5.

Meeting of Pathologists and Cancer Society.—The South Central Regional Committee of the College of American Pathologists has planned a joint meeting with the Louisiana Association of Pathologists and the state division of the American Cancer Society at the Hotel Roosevelt in New Orleans February 1-2. The first day will be devoted to a tumor seminar, with Dr. Lauren V. Ackerman, Washington University School of Medicine, St. Louis, as the guest conductor. Ten papers will be given on Saturday.

Society Elections.—At the annual meeting of the Association for Research in Nervous and Mental Disease in New York, December 14-15, the following officers were elected for 1952: Dr. H. Houston Merritt, New York, president; Dr. Robert F. Loeb, New York, first vice-president; Dr. Charles D. Aring, Cincinnati, second vice-president; Dr. Clarence C. Hare, New York, secretary-treasurer, and Dr. Rollo J. Masselink, New York, assistant secretary. Two additional trustees elected to the board of trustees were Drs. H. Houston Merritt and Clarence C. Hare. The subject for the 1952 meeting will be "Metabolic and Toxic Diseases of the Nervous System."——The American Association of Medical Clinics at its annual session in Los Angeles December 3 elected the following officers for the coming year: Dr. Dean H. Echols, Ochsner Clinic, New Orleans, La., president; Dr. Russell J. Moe, Duluth (Minn.) Clinic, vice-president; and Dr. Arthur H. Griep, Welborn Clinic, Evansville, Ind., secretary-treasurer. The next meeting will be held in Denver in December, 1952, immediately prior to the American Medical Association clinical session.

The Nation's Health in 1951.—United States citizens enjoyed exceptionally good health in 1951, according to Dr. Louis I. Dublin of the Metropolitan Life Insurance Company, New York. The death rate in the United States was about 917 per 1,000, or only 1% above the all-time low mark set in 1950, Dr. Dublin reported. The excellent record of 1951 was achieved in the face of a wave of respiratory disease in February and March. The year's death rate from tuberculosis appears to have fallen below 20 per 100,000 population, a mark not expected for several years yet, and a reduction from last year of better than 10%. One has to go back only to 1943 to find a rate double that of 1951, and only to 1933 for a rate three times as high. The infant mortality rate, estimated at 29 per 1,000 live births, will equal or perhaps slightly better in 1951 the all-time low of 1950. The maternal mortality rate, estimated at less than seven in every 10,000 live births, will set a new low. Within five years this rate has been cut more than 50%. Although the number of children is now greater than ever before in our history, communicable diseases of childhood are an insignificant part of the total mortality. The leading causes of death among children are accidents and cancer. Poliomyelitis was slightly less prevalent than in 1950, and the mortality also was slightly lower. The total number of cases for the year was about 29,000 as compared with more than 33,000 in 1950. Despite the outbreak of respiratory disease in the early months of 1951, the death rate from respiratory conditions remained low, with the combined rate from pneumonia and influenza rising less than 5% over 1950. Mortality from appendicitis continued to decline in 1951 and is now nearly 75% less than 10 years ago.

The degenerative diseases of middle and later life and cancer dominate the mortality picture in this country and in 1951 showed a modest increase over the year before. This is not unexpected in view of the steady rise in the average age of the population and the respiratory epidemic of early 1951 that hastened the deaths of many older persons. However, there was a small decrease in the death rate from diabetes. Mortality from accidents was up in 1951. Motor vehicle accidents account for about half the total increase, and occupational accidents showed an increase, the latter probably reflecting the rise in industrial production stimulated by the defense program. Other public accidents were also greater in number in 1951 than in 1950.

Honor Antibiotic Discoverers.—Portraits of the discoverers of various antibiotics were presented to pharmaceutical houses in a ceremony at the National Press Club in Washington December 13. Except for the portrait of Sir Alexander Fleming, each oil painting was presented to the pharmaceutical company which played the leading role in translating a test tube discovery into practical everyday use. Fleming's portrait was presented to Dr. Chester S. Keefer, Boston, who has been identified with the evaluation of penicillin since it was first introduced into this country. Dr. Keefer currently heads the National Research Council's Committee on Antibiotics, and during World War II he directed the nationwide research program designed to determine the clinical usefulness of penicillin. All the portraits were executed by Bernard Godwin, a Washington portrait painter. Reproductions of these portraits appear in a new book, "Antibiotic Therapy," just published. Henry Welch, Ph.D., chief of the Food and Drug Administration's Division of Antibiotics, presented the Fleming portrait to Dr. Keefer, who in turn presented the remaining portraits to executives of the pharmaceutical manufacturers. The other portraits were presented as follows: the portrait of Rene J. Dubos, Sc.D., of the Rockefeller Institute, discoverer of tyrothricin, was presented to Sharp & Dohme of Philadelphia; the portrait of Selman A. Waksman, Ph.D., Rutgers University, discoverer of streptomycin, was presented to Merck & Company of Rahway, N. J.; the portrait of Dr. Frank L. Meleney and Balbina Antoinette Johnson of Columbia University, co-discoverers of bacitracin, was presented to Commercial Solvents Corporation; the portrait of Benjamin Minge Duggar, Ph.D., of Lederle Laboratories, discoverer of aureomycin, was presented to Lederle Laboratories, Pearl River, N. Y.; the portrait of Paul Rufus Burkholder, Ph.D., chairman of the department of plant science at Yale University, New Haven, Conn., discoverer of chloromycetin, was presented to Parke, Davis Company, Detroit; the portrait of the late John L. Smith, former president and chairman of the board, was presented to the Pfizer Company, Brooklyn. Since a large number of the researchers on the Pfizer staff participated in the "team project" which discovered terramycin, it was decided to honor the head of the company at the time the work was undertaken. The portraits were made available for the presentation ceremony by Dr. Henry Klaunberg, head of the Arundel Press, Washington, which published the book on antibiotic therapy.

CORRECTION

Number of X-Ray Examinations.—In the Internship and Residency Number of The Journal, Sept. 29, 1951, page 449, the number of x-ray examinations made at the Kings County Hospital, Brooklyn, was erroneous as published and should have been 113,912.

38th Parallel Medical Society.—The Journal, Nov. 17, 1951, page 1,156 published an item submitted from "somewhere in Korea" stating that the "38th Parallel Medical Society" was said to be the first of its kind ever to be organized on the battlefield. Dr. James B. Hall of Mount Dora, Fla., writes that a correction is in order and calls attention to an item in The Journal June 5, 1943, page 380, entitled "Allied Papuan Medical Society," which held regular monthly meetings "somewhere in New Guinea" during World War II.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 24-26, 1952. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery 4.

Arizona:* *Examination.* Phoenix, Jan. 19. *Reciprocity.* Phoenix, Jan. 15-17. Sec., Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.

Arkansas:* *Regular.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 5-6. Sec., Dr. Frank C. Smith, 2301 Broadway, Little Rock.

California: *Written.* Los Angeles, Feb. 18-21; San Francisco, June 23-26; Los Angeles, Aug. 18-21; Sacramento, Oct. 20-23. Application must be received at least two weeks prior to date of examination. *Oral for Reciprocity Applicants.* Los Angeles, Feb. 16; San Francisco, June 21; Los Angeles, Aug. 16; San Francisco, Nov. 8. Applicants are requested not to arrange to come to an oral examination until they receive notice from the Credentials Committee. *Oral and Clinical for Foreign Medical School Graduates.* Los Angeles, Feb. 17; San Francisco, June 22; Los Angeles, Aug. 17; San Francisco, Nov. 9. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

Connecticut:* *Regular Examination.* Hartford, March 11-12. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic Examination.* Derby, March 11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Georgia: Atlanta and Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capital, Atlanta 3.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John K. Battenfield, Agana.

Hawaii: *Examination.* Honolulu. Jan. 14-17. Final date for filing application is Dec. 14. Sec., I. L. Tilden, 1020 Kapiolani St., Honolulu.

Illinois: Chicago, Jan. 22-24. Supt. of Regis., Mr. Charles F. Kervin, Capitol Bldg., Springfield.

Indiana: Indianapolis, June 1952. Sec., Dr. Paul R. Tindall, 1138 K of P Bldg., Indianapolis 4.

Maine: Portland, March 11-12. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Massachusetts: *Examination.* Boston, Jan. 15-18. Sec., Dr. Robert C. Cochrane, Room 37 State House, Boston.

Michigan:* *Examination.* June. Sec., Dr. J. E. McIntyre, 100 W. Allegan St., Lansing 8.

Minnesota:* Minneapolis, Jan. 15-17. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: *Examination.* Jefferson City, Feb. 19-21. *Reciprocity.* Jefferson City, Feb. 11. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

Montana: Helena, April 1. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

Nevada:* Carson City, Feb. 4. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

New Hampshire: Concord, March 12-13. Sec., Dr. John S. Wheeler, State House, Concord.

New Jersey: *Examination.* Trenton, June 17-19. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico:* Santa Fe, April 7-8. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York City and Syracuse, Feb. 5-8. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany.

North Carolina: *Endorsement.* Raleigh, Jan. 21. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.

Oklahoma:* *Examination.* Oklahoma City, June 4-5. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: Philadelphia, Jan 22-25. Acting Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

Puerto Rico: *Examination.* San Juan, March 4. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

South Dakota:* *Examination.* Sioux Falls, Jan. 15-16. Ex. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

Vermont: Burlington, Jan. 31-Feb. 2. Sec., Dr. F. J. Lawliss, Richford.

Wyoming: Cheyenne, Feb. 4. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination.* On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl lbrecht, Box 1931, Juneau.

ORADO: Denver, March 5-6. *Examination.* Sec., Dr. Esther B. Starks, 459 Ogden St., Denver 18.

ONNECTICUT: New Haven, Feb. 8. *Examination.* Miss Mary G. Reynolds, Executive Assistant, State Board of Healing Arts, 110 Whitney Ave., New Haven 10.

District of Columbia: *Examination.* Washington, April 21-22. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington, D. C.

Florida: Gainesville, June 7. *Examination.* Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

Michigan: Detroit and Ann Arbor, Jan. 11-12. *Examination.* Sec., Miss Eloise LeBeau, 501 W. Michigan Ave., Lansing 15.

Oklahoma: *Examination.* Oklahoma, April 14. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Rhode Island: Providence, Feb. 13. *Examination.* Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Texas: Austin, April. *Examination.* Sec., Bro. Raphael Wilson, 306 Nalle Bldg., Austin.

---

* Basic Science Certificate required.

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Forensic Sciences, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, Secretary.

American College of Clinic Administrators, Conrad Hilton Hotel, Chicago, Jan. 13-15. Dr. R. J. Wilkinson Jr., 1115 Sixth Avenue, Huntington, W. Va., President.

American College of Radiology, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Laryngological, Rhinological and Otological Society:
- Middle Section, Indianapolis Athletic Club, Indianapolis, Jan. 28. Dr. Ralph J. McQuiston, 20 North Meridian St., Indianapolis 4, Chairma
- Southern Section, Atlanta, Ga., Jan. 14. Dr. Lester A. Brown, 4 Peachtree St. N.E., Atlanta 3, Ga., Chairman.
- Western Section, Los Angeles County Medical Association Buildi Los Angeles, Jan. 19-20. Dr. Howard P. House, 1136 West 6th St., Los Angeles 14, Chairman.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Annual Congress on Industrial Health, William Penn Hotel, Pittsburgh, Jan. 18-19. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Atlantic Coast Line Railway Surgeons Association, Fort Sumpte Hotel, Charleston, S. C., Jan. 24-25. Dr. Braswell E. Collins, Waycros Ga., Secretary.

Central Surgical Association, Toronto, Can., March 6-8. Dr. James T Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St. Chicago 1, Secretary.

International Medical Assembly of Southwest Texas, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 244 San Antonio 6, Secretary.

National Conference on Medical Service, Palmer House, Chicago, Fe 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill Secretary.

National Conference on Rural Health, Shirley-Savoy Hotel, Denve Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 1 Chairman.

Sectional Meetings, American College of Surgeons:
- Panama City, R. P., El Panama, Jan. 16-18. Dr. Jaime De la Guardi Box 808, Panama City, R. P., Chairman.
- Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 O Lawn Ave., Dallas 4, Chairman.
- Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David Allman, 104 St. Charles Place, Atlantic City, Chairman.
- Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliqui 71 St. Ann St., Quebec, Can., Chairman.

Southwest Allergy Forum, Hotel Baker, Dallas, Texas, March 2-4 D James Holman, Medical Arts Bldg., Dallas, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Roa oke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon S Charlotte 2, N. C., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, A 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., E Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conferen Central Hall, London, England, July 8-13. Dr. J. H. Harley Willia Tavistock House North, Tavistock Sq., London, W.C.1, England, S retary General.

Congress of the International Diabetes Federation, Leyden, Neth lands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Neth lands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, O 3-4. Sir James Learmonth, Department of Surgery, University N Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, Buenos Aires, Argentina, A 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argenti Secretary-General.

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2 Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secreta General.

International College of Surgeons, Madrid, Spain, May 20-24. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. Secretary-General.

International Conference on Vitamins and Metabolism, Havana, Cu Jan. 25. Dr. Angel Vieta Barahona, Medical School, University Havana, Havana, Cuba, General Chairman.

International Congress of Internal Medicine, Friends House, Lond N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall E London, S.W.1, England, Secretary.

International Congress on Neuropathology, Rome, Italy, Sept. 8- Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. Secretary General.

International Congress of Physical Medicine, London, England, J 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C England, Hon. Secretary.

Latin American Congress of Physical Medicine, Panama City, R. Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New Yo N. Y., U. S. A., Executive Director.

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Doc Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Sto holm K., Sweden, Secretary.

Pan-American Congress of Gastroenterology, Mexico City, D.F., M 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico C D.F., Secretary.

Pan American Congress of Otorhinolaryngology and Bronchoesop gology, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonz 8 No. 358, Vedado, Havana, Cuba, General Secretary.

Pan-European Congress of Gastroenterology, Bologna, Florence Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Ors Bologna, Italy, Secretary.

DEATHS

Higgins, William Lincoln, South Coventry, Conn.; born in Chesterfield, Mass., March 8, 1867; University of the City of New York Medical Department, New York, 1890; veteran of World War I; member of the American Medical Association; past president and formerly legislative secretary of the Connecticut State Medical Society; past president of the Tolland County Medical Society; formerly township health officer; for many years county health officer; served Connecticut as member of the state senate, 1909-1910, member of the general assembly for many years, and secretary of state for two terms, from 1929 to 1933; member of Congress from 1933 to 1937; medical examiner for coroner of Tolland County from 1891 to 1947; affiliated with Willimantic (Conn.) Hospital and Manchester (Conn.) Hospital; for seven years trustee of the Mansfield (Conn.) State Training School and Hospital; past president of the Booth-Dimock Memorial Library; served as medical examiner for several insurance companies; died in a Norwich (Conn.) Hospital November 19, aged 84, of arteriosclerosis.

Coakley, Walter A., Brooklyn; born in South Amboy, N. J., in 1889; Fordham University School of Medicine, New York, 1912; member of the American Society of Plastic and Reconstructive Surgery and the American Medical Association; fellow of the American College of Surgeons; founder member of the American Board of Plastic Surgery; served in France during World War I; during World War II member of the local defense council and advisor in reorganization of General Hospital 37 at Kings County Hospital; clinical professor of plastic surgery at New York State University School of Medicine; attending plastic surgeon, director of surgery and for five years president of the medical board, Kings County Hospital; attending plastic surgeon, Holy Family Hospital in Brooklyn and St. Vincent's Hospital in New York; consultant plastic surgeon at Wyckoff Heights Hospital in Brooklyn and St. Clare's Hospital in New York; consultant plastic surgeon, New York City Police Department; died November 16, aged 62, of coronary thrombosis.

Gordon, Robert Earl ⊕ El Paso, Ill.; born in Carlyle, Ill., in 1873; Missouri Medical College, St. Louis, 1893; director on the board of the Independent Telephone Association of Illinois, which he was instrumental in organizing, had been first secretary, and later president; president of the Independent Telephone Toll Clearing Association; established the first telephone exchange in the El Paso area and served as president and general manager of the El Paso Independent Telephone Company; served as president of the grade school board, alderman, and mayor of the city; on the staffs of the Mennonite and St. Joseph hospitals in Bloomington; president of the Woodford County National Bank; died November 16, aged 78, of coronary thrombosis.

Crawford, G. Marshall ⊕ Lincoln, Mass.; born in Seattle, Oct. 4, 1906; Northwestern University Medical School, Chicago, 1932; specialist certified by the American Board of Dermatology and Syphilology; member of the American Dermatological Association, American Academy of Dermatology and Syphilology, and the New England Dermatological Society, of which he had been secretary; affiliated with Massachusetts General Hospital; instructor in dermatology at Harvard Medical School in Boston; died while on a hunting trip on Prince Edward Island, Canada, in October, aged 45, of coronary thrombosis.

Walker, John Robert ⊕ Carmel, Calif.; born in Vandalia, Ill., March 9, 1874; Barnes Medical College, St. Louis, 1898; associate fellow of the American Medical Association; specialist certified by the American Board of Ophthalmology; fellow of the American College of Surgeons; past president of the Fresno County Medical Society; served as vice-president of the California Medical Association; member of the state board of medical examiners for four years; served on the staffs of Burnett Sanitarium and St. Agnes Hospital in Fresno; died November 16, aged 77, of coronary occlusion.

Rosenberg, Louis Charles ⊕ Newark, N. J.; George Washington University School of Medicine, Washington, D. C., 1916; specialist certified by the American Board of Pediatrics; fellow of the American Academy of Pediatrics and the American College of Physicians; member of the Association for the Study of Internal Secretions; served during World War I; affiliated with Essex County Hospital for Contagious Diseases in Belleville; consultant at Babies Hospital-Coit Memorial; senior attending pediatrician, Newark Beth Israel Hospital, where he died November 3, aged 59, of hepatitis.

Campbell, Clayton C. ⊕ Long Beach, Calif.; Central College of Physicians and Surgeons, Indianapolis, 1904; an Associate Fellow of the American Medical Association; member of the American College of Allergists; died November 22, aged 71, of arteriosclerotic heart disease.

Clark, Erbie Bethel, Sparta, Tenn.; University of Tennessee College of Medicine, Memphis, 1914; county health officer; member of the American Medical Association; died in Cookeville October 2, aged 63.

Cox, Thomas Jefferson, Ionia, Mich.; University of Texas School of Medicine, Galveston, 1940; member of the American Medical Association; fellow of the American College of Surgeons; served overseas in both the European and Pacific theaters of operation during World War II; affiliated with Clinton Memorial Hospital in St. Johns and Ionia County Memorial Hospital; died October 31, aged 45, of coronary occlusion.

Crocker, Jake Thomas, Haskell, Okla.; Memphis (Tenn.) Hospital Medical College, 1883; died September 28, aged 98.

Davis, Arthur Everett ⊕ Pittsford, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1906; one of the founders of the Pittsford National Bank; died December 7, aged 74.

Dietz, Charles Klinestever ⊕ Shamokin, Pa.; University of Pittsburgh School of Medicine, 1910; died November 20, aged 76.

Donovan, Joseph William, Morocco, Ind.; New York Medical College, Flower and Fifth Avenue Hospitals, New York, 1946; member of the American Medical Association; certified by the National Board of Medical Examiners; died November 3, aged 31, of carcinoma.

Downey, Charles John ⊕ Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1894; from 1934 to 1941 medical examiner in Hampden County's Second District; an examining physician for the Selective Service System during World Wars I and II and served in that position to the time of his death; on the staffs of Springfield Hospital and Mercy Hospital, where he died November 24, aged 82, of uremia.

Dunham, Theodore ⊕ New York; Harvard Medical School, Boston, 1888; formerly professor of surgery at the New York Post Graduate Medical School and Hospital; courtesy visiting surgeon, Roosevelt Hospital; consulting surgeon, Eastern Maine General Hospital in Bangor, and member of the surgical board of Mount Desert Island Hospital in Bar Harbor; died in Bar Harbor, November 10, aged 88, of heart disease and bronchopneumonia.

Dymond, Albert Gay, Seattle; Medico-Chirurgical College of Philadelphia, 1910; died November 6, aged 69.

Ennes, Lincoln Garry, Lakeland, Fla.; Long Island College Hospital, Brooklyn, 1889; died September 11, aged 91, of cerebrovascular accident.

Everitt, Washington Brutus, Sterling City, Texas; Hospital College of Medicine, Louisville, 1890; member of the American Medical Association; in 1934 president of the Tom Green-Eight Counties Medical Society; for many years local surgeon of the Santa Fe Railroad; died September 29, aged 84, of acute cholecystitis.

⊕ Indicates Fellow of the American Medical Association.

Finnegan, William Leo, Wonewoc, Wis.; St. Louis University School of Medicine, 1919; served as health officer; formerly on the staff of St. Mary's Hospital in Madison; died in Reedsburg October 20, aged 65, of injuries received in an automobile accident.

Fleming, Thomas J., Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1913; served as president of the T. E. Schumpert Memorial Senitarium; died November 6, aged 64, of coronary thrombosis.

Ford, Ulric Stanley ⊕ Forks, Wash.; University of Pennsylvania School of Medicine, Philadelphia, 1918; mayor of Forks; served during World War I; for many years a member of the state house of representatives; died November 3, aged 64, of heart disease.

Fremmel, Isaac Frank ⊕ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; member of the American Trudeau Society; died September 5, aged 65.

Friedlander, Richard Dufficy ⊕ San Francisco; University of California Medical School, San Francisco, 1930; associate clinical professor of medicine at his alma mater; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served during World War II; associated with the Veterans Administration; affiliated with Hahnemann, Franklin, and University of California hospitals; died in Mary's Help Hospital November 1, aged 44, of accidental barbiturate poisoning.

Gage, Clifton Earl, Los Angeles; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1910; member of the American Medical Association and the Industrial Medical Association; served during World War I; affiliated with the Hospital of the Good Samaritan; died in California Hospital October 27, aged 68, of gastrointestinal hemorrhage.

Gelbke, Charles Frederick ⊕ Gretna, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1900; for many years coroner of Jefferson Parish; formerly mayor of Gretna; served the state as a member of its board of health and as district director of the Works Progress Administration; member of the American Association of Railway Surgeons; in 1945 eived the Rotary Club Award of outstanding civic achieve t during that year; died September 2, aged 72, of acute dila on of the heart.

ilbert, Joseph ⊕ Austin, Texas; University of Texas School of Medicine, Galveston, 1897; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association in 1908; member of the staff of Seton Infirmary; president of the staff, St. David's Hospital; died October 11, aged 78.

Goff, Marcellus Henry ⊕ New Rochelle, N. Y.; Howard University College of Medicine, Washington, D. C., 1927; served during World War II; died October 11, aged 50.

Guthiel, Andrew William, Rochester, N. Y.; Syracuse University College of Medicine, 1936; member of the American Medical Association; affiliated with St. Mary's and Highland hospitals; died November 7, aged 51, of hypertensive heart disease.

Hadden, David, Berkeley, Calif.; Cooper Medical College, San Francisco, 1899; member of the American Medical Association and the American Association of Obstetricians, Gynecologists and Abdominal Surgeons; past president of the Alameda County Medical Association; affiliated with Alta Bates Hospital, where he died September 22, aged 76, of coronary thrombosis.

Haller, Julia Singer, New York; Medizinische Fakultät der Universität, Wien, Austria, 1937; member of the American Medical Association; died in Ithaca, N. Y., September 8, aged 38.

Halpert, Louis, Duquesne, Pa.; Jefferson Medical College of Philadelphia, 1901; member of the American Medical Association; died in Pittsburgh November 7, aged 73, of intestinal obstruction and carcinoma of the colon.

Helwig, Henry J., St. Louis; Washington University School of Medicine, St. Louis, 1892; died in Missouri Baptist Hospital November 6, aged 85.

Hicks, Allen K., Little Rock, Ark.; Kansas City College of Medicine and Surgery, Kansas City, Mo., 1917; died October 23, aged 67, of chronic interstitial nephritis.

Hilgenberg, James Francis ⊕ Pesotum, Ill.; Medical College of Indiana, Indianapolis, 1904; affiliated with Burnham City Hospital in Champaign and Mercy Hospital in Urbana; died November 4, aged 72, of coronary occlusion.

Hirschmann, Herman, Omaha; Baltimore University School of Medicine, 1903; died in Doctors Hospital November 9, aged 71, of coronary arteriosclerosis.

Hoffman, George Edgar, Rochester, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; served as city and county health officer; one of the founders and president of the Farmers & Merchants Bank; died November 7, aged 84, of coronary embolism.

Holliday, L. Doyte, Fairmount, Ind.; Medical College of Indiana, Indianapolis, 1905; member of the American Medical Association; county health commissioner; past president of the Grant County Medical Association and the Eleventh District Medical Society; served on the school board and had been school physician; affiliated with the Marion (Ind.) General Hospital; died October 29, aged 67, of cerebral hemorrhage and arteriosclerosis

Howe, John Howard, State Sanatorium, Ark.; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1925; veteran of World War I; affiliated with Arkansas Tuberculosis Sanatorium; died October 23, aged 53, of cerebral hemorrhage.

Hudson, Harry ⊕ Philadelphia; Jefferson Medical College o Philadelphia, 1903; member of the American Academy o Orthopaedic Surgeons; served on the staffs of Jefferson, Samaritan and Philadelphia General hospitals; formerly on the facult of Temple University School of Medicine; died November 1 aged 72, of heart failure.

Huff, Leoman Dustin, Fruitland, Idaho; Drake University Co lege of Medicine, Des Moines, 1910; died in Boise October 2 aged 67.

Humphrey, James Hugh, Mooreland, Okla.; University of Okl homa School of Medicine, Oklahoma City, 1932; member of th American Medical Association; at one time a medical missio ary in China; died in Mooreland Community Hospital Octob 14, aged 49, of coronary disease.

Jamison, Garling U., Texarkana, Texas; College of Physicia and Surgeons of Chicago, School of Medicine of the Universi of Illinois, 1902; died September 11, aged 75.

Jickling, David Saunders, Flint, Mich.; University of Michig Department of Medicine and Surgery, Ann Arbor, 1906; died Hollywood, Fla.; November 4, aged 75, of coronary occlusio

Kannel, John William, Fort Wayne, Ind.; Eclectic Medical Ins tute, Cincinnati, 1897; died November 6, aged 83, of corona thrombosis and arteriosclerosis.

Knipe, William Henry ⊕ Limerick, Pa.; Jefferson Medical C lege of Philadelphia, 1894; died November 5, aged 80.

Kolack, Solomon Charles, Suffern, N. Y.; Universität Bas Medizinische Fakultät, Switzeland, 1937; member of t American Medical Association; served during World War affiliated with Good Samaritan Hospital; died October 29, ag 40, of coronary occlusion.

Priest, Paul Herbert, Omaha; University of Nebraska Colle of Medicine, 1920; member of the American Medical Assoc tion; affiliated with Nebraska Methodist Hospital; died Nove ber 1, aged 57, of coronary thrombosis.

Reichstadt, Emil, Omaha; John A. Creighton Medical Colle Omaha, 1919; died October 21, aged 69, of hypertensive he disease.

Ryan, William Butler Sr., Ridgeland, S. C.; Medical College South Carolina, Charleston, 1886; died November 5, aged of myocardial failure.

Tyson, Joseph Ellis, Texarkana, Texas; University of Tex School of Medicine, Galveston, 1924; member of the Americ Medical Association; served overseas during World War I; af iated with St. Michael Hospital in Texarkana, Ark.; died Temple, October 16, aged 53, of hypertension and heart disea

GOVERNMENT SERVICES

ARMY

Dr. Blake Named Civilian Director of Research.—Dr. Francis G. Blake, former dean of the Yale Medical School has been named civilian technical director of medical research in the Office of the Surgeon General. He assumed his new duties January 2.

Dr. Blake will serve as expert consultant to Col. John R. Wood, MC, chairman of the Army Medical Research and Development Board, in the evaluation of research projects conducted by Army medical installations and 81 cooperating civilian institutitons. He will be responsible for ensuring close coordination between the Army's present $10,079,000 medical research effort and similar programs sponsored by the other armed forces and civilian federal agencies.

On leave of absence from Yale, Dr. Blake retired earlier this year (1951) as chairman of the Committee on Medical Sciences of the Research and Development Board in the office of the Secretary of Defense. During World War II he served as special consultant to President Roosevelt and Secretary of War Stimson and as president of the Army Epidemiological Board. He is certified by the American Board of Internal Medicine, is the author of numerous treatises on epidemic diseases, and was elected president of the Association of American Physicians in 1949.

Personal.—Col. Arthur P. Long, MC, returned from the Far East Command December 20, 1951, to become assistant chief of the preventive medicine division in the Office of the Surgeon General. For his environmental control and immunization program in the combat zone, Colonel Long received the Legion of Merit with Oak Leaf Cluster.

DEPARTMENT OF DEFENSE

Surgeons General Receive Award.—The American Pharmaceutical Manufacturers Association has presented its 1951 Scientific Award to the Surgeons General of the U. S. Army, Navy, and Air Force.

The awards were presented to Maj. Gen. George E. Armstrong, USA; Rear Adm. H. Lamont Pugh, USN, and Maj. Gen. Harry G. Armstrong, USAF, by Dr. Martin Lasersohn, vice-president of Winthrop-Stearns, as chairman of the association's awards committee, at the midyear meeting, in New York. Progress of the medical services against tetanus and venereal disease, Dr. Lasersohn observed, illustrates their accomplishments. "Immunization so successfully reduced the threat of lockjaw that there were only 12 cases in all of World War II," he said. Treatment and control of malaria, typhoid fever, filariasis, scrub typhus, and rickettsiosis, and work on narcotic drug substitutes and blood plasma have been substantially advanced because of military medical experiments.

Dr. Lasersohn also paid tribute to the medical services for their contributions in the fields of forward-area surgery, psychiatric casualties, and therapeutic and diagnostic uses of radioactive isotopes. He praised their fundamental contributions in surface decompression and high-speed, high-altitude flying.

"Provision for psychiatric therapy has resulted in speedy recovery of many cases and reduction of serious breakdowns," he noted. "All that is known of the psychology of submarine personnel has come from the medical services. Clinical observation and on-the-spot experiments have produced a vast store of knowledge concerning atomic radiation."

Armed Forces Institute of Pathology.—The Scientific Advisory Board of the Armed Forces Institute of Pathology convened at the institute December 6 to make recommendations concerning types of research to be undertaken, the collation of institute studies with those of other scientific institutions, and the proper use of the vast amount of pathological material that has been accumulated. Discussion also centered on the training program of the institute. The board serves in an advisory capacity to the director of the institute.

Members attending the meeting were Dr. Arnold Rich of the Johns Hopkins University School of Medicine, board chairman; Brig. Gen. George Callendar (retired), chief, Pathology Division, Veterans Administration, Washington, D. C.; Dr. Austin Brues, director, Argonne National Laboratories, Chicago, Ill.; Dr. Balduin Lucke, director of Laboratories, University of Pennsylvania School of Medicine; Dr. Howard Karsner, medical research advisor to the Navy's Bureau of Medicine and Surgery; Dr. C. N. H. Long, dean, Yale University School of Medicine.

Others who attended were Henry Swanson, D.D.S., chairman, Council on Dental Museums and Dental Registry of the American Dental Association; Dr. Shields Warren, director, Biology and Medicine, Atomic Energy Commission; Dr. Carl V. Weller, professor of pathology, University of Michigan Medical School; Dr. Robert A. Moore, dean, Washington University School of Medicine, and Dr. James W. Kernehen, Mayo Clinic, Rochester, Minn.

PUBLIC HEALTH SERVICE

Changes on Restrictions on Shipment of Certain Birds.—Dr. Leonard A. Scheele, Surgeon General, Public Health Service, on Dec. 15, 1951, called to the attention of bird owners and pet shop operators in the United States newly-adopted changes in federal quarantine restrictions on interstate shipments and foreign importations of parrots, parakeets, love birds, and other members of the psittacine bird family.

Changes in the quarantine regulations covering importations of the birds from abroad became effective on that date, while changes in the regulations governing interstate shipments went into effect on November 15.

The quarantine restrictions were imposed originally because psittacine birds are carriers of psittacosis, or "parrot fever," an acute respiratory disease of varying severity which is readily transmittable to humans.

Changes in the Foreign Quarantine Regulations include (1) removal of the eight-month minimum age limit on birds imported for use by zoos and research institutions; (2) a reduction from two years to four months in the time birds imported as pets must be in the owner's possession prior to entry into this country; (3) removal of the requirement that imported pet birds must be transported to the owner's residence immediately on arrival in this country; and (4) the addition of a requirement of an affidavit that birds imported as pets are not to be resold and that no other birds have been brought into the country as pets by the owner in the preceding year.

Changes in the Interstate Quarantine Regulations (1) remove all federal restrictions on shipments of psittacine birds from psittacosis-free areas in the United States; and (2) prohibit the shipment of the birds from areas where the Surgeon General has determined that psittacosis infection is dangerous to the public health.

Dr. Scheele said none of the changes affects the standing requirement that interstate shipments of psittacine birds must be covered by a permit when it is required by the health department of the state of destination.

The changes in the quarantine regulations followed a Public Health Service study of the Nation's psittacosis problem. The study disclosed that psittacosis is no longer a major public health problem in this country and that it is found among birds other than members of the psittacine family. Pet psittacine birds in the United States usually include parrots, Amazons, Mexican double heads, parakeets, African grays, cockatoos, love birds, lories, and lorikeets.

FOREIGN LETTERS

ITALY

Convention of Rheumatologists.—The Fifth National Convention of Rheumatologists was held in Naples under the chairmanship of Professor Di Guglielmo, head of the medical clinic of the university of that city. The first report was on the subject of rheumatism and pregnancy. In the first part the clinical aspects were discussed by Professor Lucherini of the University of Rome, and in the second, Dr. Cervini, also of the University of Rome, discussed the hormonal aspects. Professor Lucherini emphasized that the physiopathological and clinical correlations between rheumatic diseases and pregnancy are still of great theoretical and clinical interest, particularly the concepts concerning the hypophysial-adrenocortical system, which have received much attention, especially in the field of rheumatology.

Previous observations have emphasized the beneficial influence of pregnancy in bronchial asthma, hemicrania, Raynaud's disease, psoriasis, and other diseases. Improvement brought about by pregnancy has been observed, particularly in rheumatoid arthritis, and attempts have been made to reproduce such beneficial effects by transfusion of blood taken from pregnant women. Results were, in general, favorable.

On the basis of a review of the literature and of his own clinical material, Dr. Lucherini listed the three following types of correlation existing between rheumatic diseases and pregnancy: 1. Instances in which a woman previously suffering from rheumatic disease becomes pregnant, and the clinical manifestations of chronic and acute rheumatism are affected in a beneficial way by this condition. 2. Instances in which a woman suffering from rheumatic disease becomes pregnant, and the clinical aspect of rheumatism is not influenced. 3. Instances in which the appearance of rheumatism occurs during pregnancy. Two possibilities may be considered in this group; first, instances in which the appearance of rheumatism may be correlated to occasional ganic changes caused by pregnancy. These cases are excep- al; they could be called rheumatism caused by pregnancy, nuine gravidic rheumatism; second, instances in which the earance of rheumatism during pregnancy may be considered uitous and independent.

In regard to the hormonal condition linked with pregnancy, the speaker questioned whether measuring the urinary hormonal catabolites would permit determination of a hormone with antirheumatic action predominant in the blood of the pregnant woman. He also questioned whether the endocrine concept may be accepted without reserve in the field of rheumatic diseases to the exclusion of other important factors. Professor Lucherini concluded that the problem of the correlations between rheumatic diseases and pregnancy, despite the many advancements and the utilization of cortisone (compound E of Kendall), still presents many difficulties and deficiencies in interpretation.

Dr. Cervini demonstrated the importance of hormones in pregnancy, as well as in rheumatic disease, emphasizing the hormonal modifications occurring during physiological pregnancy (predominance of progesterone during the first half of the pregnancy and successive gradual predominance of estrogen) and those occurring during delivery and during the puerperium. On the basis of the recognized importance of the pituitary gland and the adrenal cortex with regard to rheumatic disease and pregnancy, and on the basis also of the histomorphological and functional modifications of the two glands during pregnancy, the speaker discussed the importance of the two hormones corticotropin (ACTH) and cortisone in the light of modern concepts. He discussed the metabolism of these two fundamental hormones and their relation to the female sex hormones in the general hormonal picture of the pregnant woman. He discussed the importance of the study of the excretion in the urine of those hormonal catabolites (17-ketosteroids and 11-oxycorticosteroids) which are presumably of metaboli derivation from the adrenocortical hormones. He also indicat the importance of the various biologic, chemical, and calorimetric techniques used for the measurement of these catabolites.

The discovery of Hench and Kendall has aroused great enthusiasm for studies and research aiming to establish from th pathogenic point of view the presumed endocrine aspects of acute and chronic rheumatic diseases. From these studies hav come the massive data, sometimes conflicting, on the metabolism of the various hormones. Dr. Cervini has himself studied th behavior of the 17-ketosteroids and 11-oxycorticosteroids in persons with acute and chronic rheumatism, and, on the basis of his results, he concluded that these determinations are still unreliable in the general picture of rheumatic diseases and their various phases.

Indications and Contraindications of Orthopedic and Surgical Treatment of Lumbar Arthritis.—Professor Zanoli of the University of Genoa reported on orthopedic and surgical treatmen of lumbar arthritis. The orthopedic treatment of lumbar arthriti is directed, with gratifying results, to immobilization by mean of a plaster pelvic belt. Hyperemizating therapy and medica therapy with analgesic action are useful in acute phases of th disease. From the speaker's point of view, Bier's thermotherap is still preferable to radiothermy, infrared rays, and similar treat ment. Professor Zanoli believes that therapy with water, muds and medical therapy with preparations based on sulfur an iodine are advantageous in intermediate phases and in chroni syndromes. These treatments are particularly indicated in spon dylitis deformans and in posterior apophysial arthritis of Putti but in backache and sciatica associated with herniation of nucleu pulposus it is preferable to use surgical measures that may elimi nate the symptoms. Removal of the protruded disk should b associated with osteosynthesis in instances of severe degener tive reaction of the intravertebral space. In backache and sciatic due to spondylolisthesis, and in cases of primary degeneratio of the disk, arthrodesis should be performed. The truth of Putti arthrogenous apophysial concept has been confirmed by th gratifying results that the speaker obtained with lumbar arthre tomy in 10 patients with lumbago who were unaffected by th common orthopedic treatments. These results were checked to 20 years after the intervention. The pronounced crises fro lumbar arthritis that may lead to the necessity of surgical inte vention are generally observed in middle-aged persons; in o persons severe crises are rare, and in almost all cases orthoped therapy, such as plaster pelvic belts, and physiotherapy a sufficient.

Contraindications to the orthopedic intervention are rar those suggested by disturbances of the heart, liver, and gastr intestinal and urogenital apparatuses have been exaggerate In fact, even in these patients orthopedic treatment may be i stituted if greater caution is combined with the facilities th modern orthopedic technique offers today to the surgeon.

Pulmonary Tuberculoma.—In a report to the Medicosurgic Association of the Romagna region, which met under the cha manship of Professor De Castro, Dr. Barbagianni and Dr. Virgilio discussed some clinical cases that could be classifi among the so-called pulmonary tuberculomas. This denomin tion, according to the speakers, does not apply to an autonomo clinical form, but to the particular clinicoradiological aspe that may be assumed by various tuberculous forms in a speci stage of their evolution. The higher incidence that these for present today in comparison to the past may have various caus especially of pathogenic nature, attributable to the action antibiotics. Pulmonary tuberculoma is, in substance, the heali manifestation of cavities treated with antibiotics. The speake reported four cases of this type. With regard to the prognos one may be rather optimistic; however, it is probably too ear to judge whether these forms represent a definite result of he ing, or merely a period of remission in the cycle of the tube culous disease.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Tomography in Phthisiology.—Drs. D'Arcangelo, Bertaccini, Russo, and Barbagianni discussed the importance of tomographic investigation in phthisiology before the Medicosurgical Society of the Romagna region. They discussed numerous clinical cases and practical problems. One problem concerned visualization of the tuberculous cavities of the lung; in this, tomography has decisive importance from many points of view. From the diagnostic point of view, it may reveal cavities that common radiography conceals or multiple cavities in cases in which standard radiography shows only one. Tomography may also lead to the detection of an ineffective pneumothorax.

From the therapeutic point of view, tomography may modify pneumothorax treatment by revealing a cavity on the apex of the opposite lung for which a later surgical intervention may be justified. The decisive and indispensable contribution of tomography to the much discussed question of shadows of the hilus was also considered. The speakers demonstrated that in certain instances these shadows are due to the lymph nodes of the hilus but that in other cases they are only projections of shadows on the apex of the lower lobe of the lung in the area of the hilus. These conditions may be differentiated only by tomography. In another group of patients, radiological examination revealed an annular image suggestive of a tuberculous cavity, whereas tomographic investigation clearly revealed that the vessels and bronchi shadows were intertwined in various ways. In another group of clinical cases, the speakers discussed the close integration possible between tomography and thoracic surgery, particularly with regard to thoracoplasty, extrapleural pneumothorax, and intracavitary suction drainage, not only for evaluating the surgical results but also for establishing preoperatively the exact topography of the lesions, so that collapse may be achieved in the most efficient manner.

Medical Meetings in Genoa.—Medical meetings were held in the city hospital of Genoa Sestri under the chairmanship of Professor Gelera. Dr. Erede and Dr. Odello discussed the therapeutic use of paraoxypropiophenone (H 365), particularly in gynecology. This synthetic preparation is said to inhibit some stimulating substances secreted by the hypophysis, such as gonadotropin A, thyrotropin, and intermedin; however, it does not influence corticotropin, lactotropin, or gonadotropin B. It can be used in cases of hyperthyroidism, with a strong hypophysial predominance, hyperestrogenism, and some psychic disturbances of hormonal origin. It has also been successfully employed in cases of chorioepithelioma and in Riehl's melanosis. The drug is entirely nontoxic and is administered orally in doses up to 1.50 gm. daily. Dr. Sacco discussed 10 cases of renal calculosis not revealed by roentgenograms. He called the audience's attention to this negative radiological finding and to the necessity of making systematic studies for diagnosis of a painful renal syndrome apparently without lesions.

Dr. Montemagno presented a paper on refillings during exudative pleurisy caused by pneumothorax. He has observed numerous cases of this morbid entity, which does not have a well-defined etiopathogenesis, and he emphasized the particular sensitivity of the serous membranes in allergic patients. On the basis of his personal experience, he cautioned against suddenly inducing positive manometric values. An excessive collapse of the lung that may suppress its active power of retraction and expansion is thus avoided. He concluded by reaffirming the usefulness of frequent and careful thoracoscopic examinations as a means of preventing and correcting eventual irregularities that deform the pneumothorax and considerably reduce its efficiency. Dr. Russo discussed the syndromes caused by lesions of the cervical sympathetic chain and of the superior cervical ganglion in neoplastic and tuberculous diseases. Of particular interest is Pancoast's syndrome, characterized by changes of the apex of the lung associated with a homologous Horner's syndrome. Dr. Pasini made an important radiological contribution to the study of "zones" of the lungs, using a great amount of clinical material illustrated by roentgenograms. In discussing respiratory pathology in the light of the zonal structure of the lung, he emphasized the therapeutic advantages derived from this new concept, especially in bronchoscopy and in pulmonary surgical intervention.

ISRAEL

Bernhard Zondek—Sixty Years.—Several special journals were were dedicated to Prof. Bernhard Zondek in honor of his sixtieth birthday. Three of them have just appeared in Israel: The *Acta medica orientalia* (vol. 10, Aug.-Sept. 1951), *Harefuah* (vol. 41, no. 8, 1951), and the *Acta endocrinologica* (vol. 7, fasc. 1-4, 1951).

Professor Zondek received the first part of his medical education at the Berlin University. He became interested in surgery while working in a German military hospital during World War I. His first scientific works dealt with hormone problems. In 1919, Zondek became interested in gynecology and joined the staff of the gynecological department of the Charité Hospital, Berlin. During the following years he investigated the action of thyroid and ovarian extracts. Gland implantation experiments indicated that implantation is more effective than oral or parenteral administration of gland extracts in cases of endocrine deficiency. Zondek also succeeded in proving the presence of female sex hormones in the follicular wall, in the follicular fluid, and in the corpus luteum. In 1927, Zondek, in collaboration with Aschheim, demonstrated that large quantities of estrogenic hormones appear in the urine of pregnant women and pregnant mares. Thus, an easily accessible and relatively inexpensive source of this substance in relatively pure condition was discovered.

The proof of the existence of gonadotropic hormones in the hypophysis by Zondek led to the conclusion that the anterior pituitary lobe is the center of the sex functions. The gonadotropic hormones can be classified on the basis of two activating principles: the follicle stimulating hormone and the luteinizing hormone, designated by Zondek as prolan A and prolan B, respectively. The Aschheim-Zondek pregnancy test is based on the elimination of the gonadotropic hormone in the urine during pregnancy. This test, with its various modifications, still retains the first place in the laboratory diagnosis of pregnancy.

During the next years, Zondek studied the effect of female sex hormones in man and animals. The follicle stimulating hormone was found in the urine of castrated women and menopause patients, and its diagnostic importance was recognized. The appearance of this hormone in the urine of carcinoma patients was of special importance, although its entire meaning is not yet fully understood. The tremendous increase of gonadotropic hormones in the urine of patients suffering from nydatidiform mole and chorioepithelioma has become of paramount diagnostic importance. The fact that the Aschheim-Zondek test is also positive in cases of chorioepithelioma of men suggests that this strange tumor is analogous, not only histologically but also functionally, to cases of chorioepithelioma in women. Further studies in the field of pituitary hormones led to the discovery of the hormone of the intermediate lobe of the pituitary gland, designated as intermedin by Zondek.

In October, 1934, Zondek settled in Jerusalem where he was appointed head of the gynecological department of the Hadassah University Hospital and of the Hormone Research Institute. Here, he studied the problems of the treatment of sterility. He also succeeded in developing pituitary tumors (by administering large doses of estrogenic substances), dwarfism, and various other degenerative disturbances in animals. In his clinical work, Zondek has given special attention to the treatment of menstrual disturbances and has proved that it is possible to induce uterine bleeding in amenorrheic patients with relatively small quantities of progesterone. This has led to the "one-shot therapy" of secondary amenorrhea in the form of a combined estrone-progesterone solution.

Zondek's experimental and clinical investigations are summarized in two monographs, "Die Hormone des Ovariums und des Hypophysen-Vorderlappens" and "Genital Function and Its Regulations." In spite of the many obstacles that Zondek had to overcome during his scientific career, he has done much important work. His inspiring personality and his capacity to interest his collaborators in his ideas has yielded constructive results in the field of the gynecologic endocrinology.

Periarteritis Nodosa.—One of the rare cases of periarteritis nodosa diagnosed during the life of the patient and confirmed by autopsy is described by H. Steinitz and E. Loewental in *Harefuah* (41:113, 1951). A 65-year-old man suddenly fell ill with a high temperature and died four months later. The symptoms that led to a diagnosis were jaundice with high temperature; severe backache, especially in the right lumbar region; temporary swelling of the arms; hypertension, 150/90 to 170/100 mm. Hg., even in afebrile periods; heavy and progressive neuritis of both legs, and, during the last month, of the left arm. Nephritis was present in the last phase of the illness only (in the beginning there were symptoms of cystitis and prostatitis, apparently in consequence of an old gonorrheal infection). The laboratory findings were: leukocytosis (the count was usually between 10,000 and 15,000, but was as high as 23,500 leukocytes) with 75 to 82% neutrophil polynuclears and 5 to 8% eosinophils. Progressive secondary anemia and high blood sedimentation rate (75 to 100 mm. in the first hour—Westergren method), were also present. Results of all other examinations, chemical, serological, and bacteriological, as well as two examinations of the cerebrospinal fluid were normal. A mild diabetic condition was controlled by the administration of 10 units of insulin twice daily. The urine was always free of sugar. Only on the last day of life did the blood sugar rise to 700 mg. per 100 cc., with a urea level of 94 mg. per 100 cc.

The course of the disease was not influenced by therapeutic measures, which included four blood transfusions and large doses of antibiotics (39.5 million units of penicillin, 31 gm. of streptomycin, 25 gm. of aureomycin, and 12 gm. of chloramphenicol [chloromycetin®] given alone or simultaneously). No therapeutic trial with cortisone or corticotropin could be made. The clinical diagnosis was confirmed by an anatomic examination showing the typical findings of periarteritis nodosa (polyarteritis nodosa) in all the organs examined. Heavy necrosis and signs of periarteritis nodosa in the muscles of the back were the cause of the severe backaches. Preceding the final "acute" phase were: (1) hypertension during the last 10 years, remaining approximately the same during the last months of progressive prostration; (2) mild diabetes during the last five years, easily controlled by diet and small doses of insulin; and (3) a duodenal ulcer, with hyperacidity and typical pain, found by roentgen examination two years earlier but not confirmed by the last roentgenogram and ıt found on autopsy.

Although hypertension is known as one of the commonest ptoms of periarteritis nodosa and peptic ulcer is sometimes present, the combination of periarteritis nodosa and diabetes has been described only in a few cases. In this connection, it should be stressed that the histological examination revealed that the earliest and most widespread changes of periarteritis nodosa took place in the blood vessels of the pancreas. It is probable that diabetes was caused by these specific lesions and that the diabetes as well as the hypertension and the peptic ulcer were symptoms of the chronic arterial process of periarteritis nodosa, preceding the final fever phase of the disease by many years.

Bacteria-Free Culture of Trichomonas Hominis.—Prof. S. Adler has written a paper for the jubilee issue of the *Harefuah* honoring Professor Zondek which describes the results of a culture of Trichomonas hominis on a bacteria-free medium. Some strains grow on Boeck and Drhbohlav egg slant overlaid with semisolid or bouillon containing about 10% inactivated serum, with a trace of ascorbic acid. Other strains do not survive on this medium, but all five strains isolated from bacteria (by the use of penicillin, up to 1,000 units per milliliter, and streptomycin) grow on a medium consisting of egg slant overlaid with a liquid, consisting of bouillon, 4 parts, filtrate of culture of Escheria coli lysed by bacteriophage, 4 parts, inactive cow serum, 1 part, nicotinamide, 1:50,000, and a trace of ascorbic acid or 1 cc. of lemon juice.

The phage-lysed Esch. coli provide factors necessary to the development of some strains of T. hominis. The addition of nicotinamide enables the culture to survive for one month. According to Adler, one of the bacteria-free strains of T. hominis multiplied intensively in the abdominal wall of mice after inoculation together with pyogenic organisms, however, it did not produce abscesses in the absence of pyogenic organisms.

NORWAY

Hospital and General Practitioners' Diagnoses Compared.—I order to determine the accuracy of the diagnoses with whi general practitioners send patients to hospitals, Dr. Mikael Kobr has attempted to analyze the diagnoses of 1,000 consecuti patients who have been subjected to four tests. The first te concerned the diagnosis with which the patient was sent to th hospital, the second, the diagnosis of an intern on the patient' admission to the hospital, the third, the diagnosis of an ex perienced hospital physician, and the fourth, the diagnosis wit which the patient was discharged. The general practitioner diag nosed 341 cases correctly (a third of the total), the intern, 43 cases, and the experienced hospital physician, 664 cases. Outrig blunders were made by general practitioners in 155 cases, intern in 109 cases, and experienced hospital physicians in 36 case Out of 27 patients sent to the hospital with the diagnosis cholelithiasis or cholecystitis, there were only 16 in whom th diagnosis could be verified; the illness in the other cases w simple constipation. Among eight patients sent to the hospit for pernicious anemia, seven did not suffer from any form anemia, and among nine patients sent to the hospital with t diagnosis of cancer, there were only three in whom a maligna tumor could be found.

Dr. Kobro's comments on these findings reflect criticism the hospital physician rather than of the general practition The hospital physician scored the greatest number of marks, b he did so, to a great extent, by virtue of the laboratory a radiological tests at his disposal; however, he is apt to wa time over such tests. For example, an old patient is admitted the hospital complaining of pain in the back. He probably h spondylosis, a disease presenting no great diagnostic probler A radiological examination is made the day after admissi This is repeated on the third day, and on the fourth day, t radiological department gives its verdict; treatment based o is not started until the fifth day. The cost of special tests m not be great, but the time spent on them adds enormously the cost of hospital treatment.

BRAZIL

Hodgkin's Disease with Parietal Pericardial Involvement.— Quintiliano H. Mesquita, of the Department of Cardiology, N Aparecida Hospital, São Paulo, recently described a rare c of pericardial involvement in Hodgkin's disease. Of the second invasions observed in Hodgkin's disease, involvement of heart and pericardium is seldom reported. According to the views published during the last 15 years by Harrell, Gar Setzu, and McCoy, the literature contains only 27 cases, incl ing Dr. Mesquita's patient, of pericardial involvement in Hc kin's disease, of which only 12 had pericardial lesion as the lesion in the heart. Of the remaining 15, 5 had concomitant p cardial and myocardial invasion, 8 had myocardial involven exclusively, and 2 were reported with only a vague referenc heart involvement. According to Dr. Mesquita, his case was first such instance reported in the Brazilian medical literat

The author stressed the main features of his case: a surv for nearly five years; the exceptional localization on the p cardium, causing exudation; the treatment with mustard gas roentgen rays; termination with voluminous pericardial effu of the extensive involvement of the left lung; and cardiac fail While she was under the care of another physician, in 194 pathological examination had been made of a cervical glan this patient, a girl of 15, with a report of chronic nonspe lymphadenitis. Although this might have suggested a dia sis of Hodgkin's disease, she was given treatment for tuberc sis of the lymphatic glands, with roentgen therapy of cervical and axillary glands and of a tumoral mass above manubrium of the breast bone. In 1948, the patient was under Dr. Mesquita's care. With mustard gas therapy, there a considerable regression of the glandular masses and the p cardial effusion; but, in the last months of her illness, a r tively rapid invasion of the left lung and a new effusion of pericardium led to cardiac insufficiency, which resulted in de

An Easy and Rapid Staining Method for Treponemas.—Dr. L. Salles Gomes, of the central laboratory of the São Paulo State Department of Health, described a new easy and rapid staining method he has successfully used for Treponema pertenue, the causative parasite of frambesia, and for other treponemas. The staining medium is the "super chrome" blue-black ink used to fill the Parker 51 fountain pen. A drop of serum from a frambesia lesion is mixed with a drop of ink at the end of a clean slide. The mixture is spread with the edge of a cover slide as is done for blood smears. The manipulations must be done as quickly as possible, and two slides must be prepared, one with a thin smear and another with a thick one. In about three minutes the smears are dry and ready for an oil immersion examination. The treponemas stand out clearly, as blue-black stains on a light blue background. The staining is permanent. Red, green, light blue, and black inks of the same kind do not stain treponemas well. The author hopes that the method will simplify the diagnosis of syphilis, frambesia, and pinta, whenever the use of the conventional methods, such as dark field, Giemsa staining, and Fontana-Tribondeau's silver impregnation, is not feasible.

Frequency and Severity of Accidents in the Textile Industry.—For both the value of the production and for the number of workers, the textile industry occupies an important place in the industrial activity of Brazil and the state of São Paulo. Twenty-one per cent of the industrial workers of the country and 25 per cent of those of the state of São Paulo are employed by the textile industry. In the city of São Paulo, in 1948, there were 353,530 workers, of which 85,735 (24%) were employed in this industry. Dr. B. Alves Ribeiro, professor at the School of Hygiene and Public Health, University of São Paulo, studied the accidents that occurred during the year 1948 in 28,746 workers from 150 textile mills, a representative sample of the industry. During that year, there were 2,444 accidents, causing one death, 103 permanent and total incapacities, and 2,340 temporary and partial incapacities. This volume of accident cases corresponds to a rate of 8.5% of the total number of workers, or an average ratio of 1 worker in 12 suffering an accident. According to the method of compiling industrial injury rates adopted by the American Standards Association, these figures correspond to a frequency rate of 35.4, a severity rate of 1.4, and an average time charge of 40 days per case. The frequency rate is about 4 times higher than that presently observed for the same industry in the United States, and the severity rate is nearly double. This emphasizes the gravity of the industrial accident problem in the local textile industry, stressing the need for urgent and adequate measures to improve the situation.

Acute Injuries of the Head.—Dr. Luis G. Wertheimer, assistant professor of surgery at the University of São Paulo, published a study of 13,110 patients treated by the traumatology service of the Hospital das Clinicas. Of this total, 3,821 patients had acute head injuries, with the following distribution: cerebral concussion, 43.5%, skull fractures, 32.4%, scalp injuries, 12.3%, cranial contusions, 9.4%, and firearm wounds, 2.4%. The gravity of these traumas is emphasized by the fact that, out of 660 deaths which occurred among the total 13,110 patients, 543 were from head injuries. Thus, while the general fatality rate is 5% of the total patients injured, head injuries alone comprise 4.2% of the total, leaving only 0.8% of the fatalities due to other injuries. In relation to the cause of the accidents, it is important to note that about 50% of the cases of head injury were caused by vehicle accidents, and about 25% by falls. Concomitant injuries of adjacent parts were observed principally in cases of fractures of the frontal and temporoparietal regions and fractures of the base of the skull. The most frequent lesion associated with the frontal injury was fracture of one of the face bones. In the great majority of cases the x-ray examination disclosed a line of fracture, an exception being the closed fractures of the base of the skull, in which in only 69.8% of the fracture could be visualized by the roentgen picture. The most frequent fractures were those of the temporoparietal region (41.7%), followed by those of the base of the skull (28.9%) and those of the frontal bone (22.4%). While the fractures of the frontoparietal region, of the occipital bone, and of the base of the skull were mainly of the closed type, for the frontal bone 71.1% were open fractures. The fatality rate for all cases of fracture of the head bones was 45.1%, the highest figure being for fractures of the base of the skull (52.5%), followed by those of the temporoparietal region (30.7%) and the frontal bone (10.5%).

Brazilian Medical Association.—At a meeting held recently at Belo-Horizonte, Minas Geraes, the basis was laid for the organization of a national medical association, to be called Associação Medica Brasileira. The Brazilian Medical Association will have a structure similar to that of the American Medical Association. In 17 of the 20 states of Brazil the organizational work has already begun. The largest delegations at the Belo-Horizonte meeting were those from the state of São Paulo, with 22 delegates, representing about 9,900 physicians, and from the Federal District (city of Rio de Janeiro) with 14 delegates, representing about 4,500 physicians.

BOLIVIA

Fourth National Medical Congress.—During the first week of August, the Fourth National Medical Congress was held in La Paz in the University of San Andrés under the chairmanship of the Minister of Health. The subjects discussed were chronic heart diseases, by Dr. Armando Morales; cancer of the heart, by Dr. Hector Fernandez; glomerulonephritis, by Dr. Guillermo Jauregui; head injuries, by Dr. Mario Michel; abnormal pregnancy, by Dr. Jenaro Mariaca; cancer of the uterus, by Dr. Roberto Suarez; silicotuberculosis, by Dr. Leon Arce; collapse therapy in tuberculosis, by Dr. Antonio Brown; intraocular tonus, by Dr. Luis Landa; Buccorhinopharyngeal leishmaniasis, by Dr. Félix Veintemillas; renal tuberculosis, by Dr. Renato Gamarra, and project for code of medical ethics, by Dr. Enrique Saint Loup.

Activities of Inter-American Cooperative Public Health Service.—Since 1943, the Servicio Cooperativo Interamericana de Salud Pública (a public health agency sponsored by the Bolivian government and the Institute of Inter-American Affairs) has been dedicated to the organization of health centers, health education, and sanitary engineering activities. A small number of fellowships is granted annually to physicians, nurses, and other technicians engaged in public health work. The nursing section, assisted by the physicians of the same agency, also offers a course in public health training for graduate nurses every year. In summarizing the work accomplished by the medical division, it may be pointed out that at the present time there are nine health centers in the republic. The Central Public Health Laboratory, which aids in the Servicio's program as well as those of other medical organizations is located in Cochabamba. There is a mobile unit in the Department of Potosi that takes care of some 25,000 natives living in four provinces. Preference is given to the care of the school population. There are two other mobile units in the departments of La Paz and Cochabamba devoted exclusively to performing vaccinations. The activities of the medical division include scientific meetings that are held every fortnight in the main health centers.

Personal News.—As a result of the change in government during the last days of May, 1951, Dr. Valentín Gomez, a colonel in the Medical Corps of the Bolivian Army, became the minister of health. The former minister, Dr. Félix Veintemillas, director of the Institute of Bacteriology and dean of the Faculty of Science of the University of San Andrés for the last few years, died unexpectedly from myocardial infarction while attending the Fourth National Medical Congress.

Dr. John J. Hanlon, professor in the School of Public Health of the University of Michigan, who was during the past year director of the Servicio Cooperativo Inter-Americano de Salud Pública, received a decoration from the Bolivian government in recognition of his valuable work in that country. Dr. Anthony Donovan, formerly in charge of the Pan American Sanitary Bureau Regional Office in Lima, replaces Dr. Hanlon. Upon completion of his one year contract with the World Health Organization as a team leader of the Maternal and Child program in the Philippines, Dr. Carlos Ferrufino returned to La Paz, rejoining the Servicio Cooperativo Staff as head of the Department of Planning and Evaluation of [illegible]rams.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

ADDITIONAL HOSPITALS REGISTERED

The following hospitals were registered by the Council on Medical Education and Hospitals of the American Medical Association at its meeting in Los Angeles, Dec. 2, 1951:

Flowers Hospital, Dothan, Ala.
St. Jude's Catholic Hospital, Montgomery, Ala.
Ashdown Hospital, Ashdown, Ark.
Desha County Hospital, Dumas, Ark.
Roy Hospital, Forrest, Ark.
Boone County Hospital, Harrison, Ark.
Bradley County Memorial Hospital, Warren, Ark.
U. S. Naval Hospital, Corona, Calif.
Biggs-Gridley Memorial Hospital, Gridley, Calif.
Kings View Homes, Reedley, Calif.
Sonora Hospital, Sonora, Calif.
Tulare County General Hospital, Tulare, Calif.
Trinity General Hospital, Weaverville, Calif.
Glenn General Hospital, Willows, Calif.
Veterans Administration Hospital, Denver, Colo.
Santa Fe Hospital, La Junta, Colo.
Adams Hospital, Washington, D. C.
Children's Convalescent Home, Washington, D. C.
District Training School, Washington, D. C.
Hendry County Hospital, Clewiston, Fla.
Fort Pierce Memorial Hospital, Fort Pierce, Fla.
Hialeah Hospital and Sanitarium, Hialeah, Fla.
Monroe General Hospital, Key West, Fla.
sceola Hospital, Kissimmee, Fla.
theast Florida State Sanatorium, ntana, Fla.
istian Hospital, Miami, Fla.
ami Retreat Sanatorium, Miami, Fla.
Sunny South Hospital, New Smyrna Beach, Fla.
Municipal Hospital, Port St. Joe, Fla.
American Legion Hospital for Crippled Children, St. Petersburg, Fla.
Bayou Sanitarium, St. Petersburg, Fla.
Pine Ridge Hospital, West Palm Beach, Fla.
Grady County Hospital, Cairo, Ga.
St. Francis Hospital, Columbus, Ga.
Hall County Hospital, Gainesville, Ga.
Pineworth Lodge, Macon, Ga.
Askew Memorial Hospital, Nashville, Ga.
Howard-Pirkle Hospital, Pelham, Ga.
Brook Haven Manor Sanitarium, Stone Mountain, Ga.
Upson County Hospital, Thomaston, Ga.
Atlantic Coast Line Hospital, Waycross, Ga.
Burke County Hospital, Waynesboro, Ga.
Ashton Memorial Hospital, Ashton, Ida.
Marsh Valley Hospital, Downey, Ida.
Bonner General Hospital, Sandpoint, Ida.
Granville Manor, Chicago, Ill.
Central Hospital, Clifton, Ill.
Thomsen Clinic Hospital, Dolton, Ill.
Keeley Institute, Dwight, Ill.
Galesburg State Research Hospital, Galesburg, Ill.
Lightner Hospital, Harrisburg, Ill.
Highwood Hospital, Highwood, Ill.
Lawrence County Memorial Hospital, Lawrenceville, Ill.
River Forest Health Resort, Melrose Park, Ill.
Wabash General Hospital, Mount Carmel, Ill.
Lincolnview Hospital and Sanitarium, Springfield, Ill.
Warren Hospital, Michigan City, Ind.
Washington County Memorial Hospital, Salem, Ind.
Tipton County Memorial Hospital, Tipton, Ind.
Akron Community Hospital, Akron, Iowa
Rosary Hospital, Corning, Iowa
Buena Vista County Hospital, Storm Lake, Iowa
Schoitz Memorial Hospital, Waterloo, Iowa
St. Margaret's Mercy Hospital, Fredonia, Kan.
Brown County Hospital, Hiawatha, Kan.
Hiawatha Community Hospital, Hiawatha, Kan.
Hoisington Lutheran Hospital, Hoisington, Kan.
Kingman Memorial Hospital, Kingman, Kan.
Kansas State Penitentiary Hospital, Lansing, Kan.
St. Joseph Memorial Hospital, Larned, Kan.
Marysville Hospital, Marysville, Kan.
Medicine Lodge Memorial Hospital, Medicine Lodge, Kan.
Onaga Hospital, Onaga, Kan.
Gove County Hospital, Quinter, Kan.
Greeley County Hospital, Tribune, Kan.
Flaget Memorial Hospital, Bardstown, Ky.
Covington-Kenton County Tuberculosis Sanatorium, Covington, Ky.
Dr. D. L. Jones Clinic and Hospital, Fulton, Ky.
District Six Tuberculosis Hospital, Glasgow, Ky.
Hurst-Snyder Hospital, Hazard, Ky.
Garrard County Memorial Hospital, Lancaster, Ky.
Cardinal Hill Convalescent Hospital, Lexington, Ky.
Casey County War Memorial Hospital, Liberty, Ky.
District Five State Tuberculosis Hospital, London, Ky.
Our Lady of Peace Hospital, Louisville, Ky.
Owen County Memorial Hospital, Owenton, Ky.
Caldwell County War Memorial Hospital, Princeton, Ky.
Pepe Clinic Hospital, Bogalusa, La.
Washington-St. Tammany Charity Hospital, Bogalusa, La.
Savoy Hospital, Mamou, La.
Oakdale Infirmary, Oakdale, La.
Gundry Sanitarium, Baltimore, Md.
Fall River General Hospital-Tuberculosis Division, Fall River, Mass.
Jewish Tuberculosis Sanatorium, Rutland, Mass.
Hanover House, West Hanover, Mass.
Edyth K. Thomas Memorial Hospital, Detroit, Mich.
Harworth Hospital, Detroit, Mich.
Glenbrook Hospital, Farmington, Mich.
Genesee County Tuberculosis Sanatorium, Flint, Mich.
Dickinson County Memorial Hospital, Iron Mountain, Mich.
Rogers City Hospital, Rogers City, Mich.
Saginaw County Infirmary Hospital, Saginaw, Mich.
Standish General Hospital, Standish, Mich.
Clearwater County Memorial Hospital, Bagley, Minn.
Buffalo Memorial Hospital, Buffalo, Minn.
Butler Hospital, Cloquet, Minn.
Valleyview Hospital and Sanitarium, Jordan, Minn.
St. Michael's Hospital, Sauk Centre, Minn.
Soudan Hospital, Soudan, Minn.
Wells Municipal Hospital, Wells, Minn.
Marion County General Hospital, Columbia, Miss.
Ellisville Municipal Hospital, Ellisville, Miss.
Schmid Sanitarium, Jackson, Miss.
Louisville Hospital, Louisville, Miss.
Arrington Hospital, Meridian, Miss.
Felix Long Memorial Hospital, Starkville, Miss.
Butler Memorial Hospital, Butler, Mo.
Oakland Park Hospital, Glendale, Mo.
Krestwoods Medical Hospital, Kansas City, Mo.
Wheatley-Provident Hospital, Kansas City, Mo.
Dunklin County Memorial Hospital, Kennett, Mo.
Presnell Hospital, Kennett, Mo.
Perry County Memorial Hospital, Perryville, Mo.
Phelps County Memorial Hospital, Rolla, Mo.
Casebeer Eye, Ear, Nose and Throat Hospital, Butte, Mont.
Veterans Administration Hospital, Miles City, Mont.
Carbon County Memorial Hospital, Red Lodge, Mont.
Musselshell Valley Hospital, Roundup, Mont.
Wheatland Memorial Hospital, Wheatland, Mont.
Gothenburg Memorial Hospital, Gothenburg, Neb.
Dick Hall's House, Hanover, N. H.
Manchester City Hospital, Manchester, N. H.
Elmer Community Hospital, Elmer, N. J.
Meyer Sanitarium, Park Ridge, N. J.
Valley Hospital, Ridgewood, N. J.
Alexander Linn Hospital, Sussex, N. J.
Eastern New Mexico Memorial Hospital, Melrose, N. Mex.
Roosevelt County Hospital, Portales, N. Mex.
Veterans Administration Hospital, Albany, N. Y.
Amsterdam City Hospital, Amsterdam, N. Y.
Kenmore Mercy Hospital, Buffalo, N. Y.
Emma Laing Stevens Hospital, Granville, N. Y.
Placid Memorial Hospital, Lake Placid, N. Y.
Onondaga County Hospital, Onondaga, N. Y.
Sing Sing Prison Hospital, Ossining, N. Y.
High Point Hospital, Port Chester, N. Y.
Willowbrook State School, Staten Island, N. Y
Transylvania Community Hospital, Brevard, N. C.
Albemarle Hospital, Elizabeth City, N. C.
Garden Terrace Convalescent Home, Greensboro, N. C.
Caldwell Memorial Hospital, Lenoir, N. C.
Franklin Memorial Hospital, Louisburg, N. C.
St. Joseph of the Pines Hospital, Southern Pines, N. C.
Alleghany County Memorial Hospital, Sparta, N. C.
Warren General Hospital, Warrenton, N. C.
Brown Community Hospital, Williamston, N. C.
John C. Wessell Sanatorium, Wilmington, N. C.
Bowling Green University Hospital, Bowling Green, Ohio
Memorial Hospital, Norwalk, Ohio
Champaign County Hospital, Urbana, Ohio
Erick Hospital, Erick, Okla.
Comanche County Memorial Hospital, Lawton, Okla.
Perry Memorial Hospital, Perry, Okla.
Picher Hospital, Picher, Okla.
Walters Hospital and Clinic, Walters, Okla.
Dr. Bostwick's Nose and Throat Hospital, Ardmore, Pa..
Veterans Administration Hospital, Erie, Pa.
Memorial Hospital, Everett, Pa.
Valley Forge Heart Institute and Hosp., Fairview Village, Pa
Gnaden Huetten Memorial Hospital, Lehighton, Pa.
Teah Private Hospital, Loch Haven, Pa.
Florence Crittenton Home, Philadelphia, Pa.
Laurel Hospital and Clinic, Wilkes-Barre, Pa.
Divine Providence Hospital, Williamsport, Pa.
Kent County Memorial Hospital, Warwick, R. I.
Good Samaritan-Waverly Hospital, Columbia, S. C.
Hope Clinic Hospital, Lockhart, S. C.
Clarendon Memorial Hospital, Manning, S. C.
Wallace Thompson Hospital, Union, S. C.
Creamer Community Hospital, Dupree, S. D.
Ipswich Community Hospital, Ipswich, S. D.
Community Memorial Hospital, Redfield, S. D.
Rosebud Community Hospital, Winner, S. D.
Isbell Eye, Ear and Throat Hospital, Chattanooga, Tenn.
Memorial Hospital, Johnson City, Tenn.
East Tennessee Tuberculosis Hospital, Knoxville, Tenn.
Scott Hospital, Lake City, Tenn.
Faulkner Springs Sanitarium and Hospital, McMinnville, Tenn.
Oak Ridge Institute of Nuclear Studies, Medical Division, Oak Ridge, Tenn.
Obion County General Hospital Union City, Tenn.
Physicians and Surgeons Hospital Alice, Texas
Oak Ridge Sanitarium, Austin Texas
Anchell Hospital, Cleveland, Texa
Cleveland Hospital, Clevelan Texas
Cuero Hospital and Clinic, Cuero Texas
Jones Eye, Ear, Nose and Throa Hospital, Dallas, Texas
Missouri, Kansas, Texas Railroa Employees Hospital, Deniso Texas
Fleming Memorial Hospital, Elgi Texas
Florence Clinic-Hospital, Florenc Texas
Leake Clinic and Emergency Ho pital, Gladewater, Texas
McKean Clinic and Emergenc Hospital, Gladewater, Texas
Haskell County Hospital, Haskel Texas

Keightley Hospital, Houston, Texas
North Houston Hospital, Houston, Texas
Steed Clinic and Hospital, Hughes Springs, Texas
General Hospital, Iraan, Texas
Hall-deVlaming Hospital, Kaufman, Texas
Roy H. Laird Memorial Hospital, Kilgore, Texas
Price and Black Hospital, Lamesa, Texas
Littlefield Hospital and Clinic, Littlefield, Texas
Mathis Hospital, Mathis, Texas
Western Clinic-Hospital, Midland, Texas
Missouri Pacific Lines Employees' Hospital, Palestine, Texas
Bannister Memorial Clinic Hospital, Pearsall, Texas
Harper Eye, Ear, Nose and Throat Hospital, Port Arthur, Texas
Rosebud Hospital and Clinic, Rosebud, Texas
Memorials Hospital, San Angelo, Texas
Santa Anna Hospital, Santa Anna, Texas
Gaines Clinic and Hospital, Seminole, Texas
Shamrock General Hospital, Shamrock, Texas
Charles H. Ewing Memorial Hospital, Sinton, Texas
Sterling County Hospital, Sterling City, Texas
Strawn Hospital, Strawn, Texas
Bronnenberg Clinic Hospital, Tahoka, Texas
Jackson Clinic-Hospital, Terrell, Texas
Federal Correctional Institution, Texarkana, Texas
U. S. Air Force Hospital, Wichita Falls, Texas
Yorktown Memorial Hospital, Yorktown, Texas
American Fork Community Hospital, American Fork, Utah
Dickenson County Hospital, Clintwood, Va.
Warren Memorial Hospital, Front Royal, Va.
John Randolph Hospital, Hopewell, Va.
Stonega Hospital, Stonega, Va.
Louise Obici Memorial Hospital, Suffolk, Va.
Shenandoah County Memorial Hospital, Woodstock, Va.
Ocean Beach Hospital, Ilwaco, Wash.
Prosser Memorial Hospital, Prosser, Wash.
Northgate Surgery, Seattle, Wash.
West Seattle General Hospital, Seattle, Wash.
Central Memorial Hospital, Toppenish, Wash.
Elizabeth Coplin Leonard Memorial Hosp., Buckhannon, W.Va.
Boiarsky Memorial Hospital, Charleston, W. Va.
Veterans Administrations Hospital, Madison, Wis.
Belleview Convalescent Hospital, Milwaukee, Wis.
Platteville Municipal Hospital, Platteville, Wis.
St. Mary's Hospital, Superior, Wis.
Waupun Memorial Hospital, Waupun, Wis.
Southshore Hospital, Aiea, Hawaii
Guayama Tuberculosis Hospital, Guayama, P. R.
Mayaguez and Western Polyclinic, Mayaguez, P. R.

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE

At its meeting on Dec. 2, 1951, the Council on Medical Education and Hospitals voted to remove the University of North Dakota School of Medicine from probation and to restore the school to the status of a fully approved school of the basic medical sciences. This school has been on probation with the Council since May, 1939. The action of the Council was based on a survey of the school carried out by representatives of the Council and the Association of American Medical Colleges, Oct. 1-5, 1951.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Constitutionality of in Relation to Chiropractors.—The state, on relation of the board of medical registration and examination, filed a proceeding to adjoin the defendant chiropractor from practicing medicine without a license. From a judgment granting a permanent injunction, the defendant appealed to the Supreme Court of Indiana.

The defendant contended generally and specifically that the medical practice act was unconstitutional in its attempt to create a medical board to license chiropractors.

This court has previously held, said the Supreme Court, that the practice of chiropractic is the practice of medicine. Under existing statutes the legislature made it unlawful to practice medicine without a license. Therefore, until the defendant obtains a license he cannot practice chiropractic. The board of medical registration and examination of Indiana was granted the authority to make rules and regulations and to set standards for medical schools, which includes chiropractic schools, and also to set the requirements which must be met by applicants for examinations to practice chiropractic under a medical license. An applicant for a license to practice chiropractic is exempted by statute from taking an examination in materia medica, surgery and obstetrics. In conformity with the statutes, the board of medical registration and examination adopted rules prescribing the requirements for medical schools and the teaching of chiropractics. The rules, both as to schools of chiropractic and applicants for examination, specifically exempt the study of and examination in materia medica, surgery, and obstetrics, and thus meet the standards set by the legislature. The defendant has made no effort to comply with these rules and the statutes, said the Supreme Court. He attempts to set his own standards of qualifications for a license and disregards the standards as set by the legislature for education and examination. The practice of medicine requires the highest standards of education, and the cases holding this apply equally to the practice of chiropractic, since both medical doctors and chiropractors minister to the ills of the human body. The board of medical registration and examination has, through its adopted rules, set requirements in compliance with legislative enactment as to educational requirements as well as requirements for examination. Therefore, the Supreme Court concluded, if a chiropractor desires to be licensed in this state, he must meet the requirements as set by the board of medical registration and examination.

The defendant however, contended that the composition of the board of medical registration and examination was unconstitutional because the members of the medical profession have a direct pecuniary interest in the elimination of chiropractors. It appears, said the Court, that the majority of the board of registration and examination are members of the medical profession, holding a license to practice medicine, obstetrics, and surgery. There is no contention that these members are directly pecuniarily interested except by reason of that fact. None of the members are shown to be from a community in which defendant lives and none of the members are shown to be financially interested in any way in defendant's community or in his practice. The members of the medical board, the Supreme Court concluded, even though they were from the same community as the defendant, would appear to have only an indirect pecuniary interest. Furthermore, said the Court, the composition of the board of medical registration and examination and the manner in which it may function is a legislative question and not a judicial one, the wisdom of which is a matter to be determined by the legislature. So long as the constitution is not offended, we may not interfere with its enactments.

Finally, the defendant contended that he cannot have a fair and impartial hearing before the medical board as now constituted. The defendant's answer failed to allege that he had met the qualifications and that he had applied for a license. He contended that because five members of the board are medical doctors, holding unlimited licenses to practice medicine, they desire to eliminate all chiropractors and monopolize the profession. Merely because a person holds a license in a certain professional field, and is appointed to a board to pass upon the qualifications of those requesting a license to operate in that field, it cannot be said to justify the assertion that he is so unfair and impartial that he cannot fairly and impartially pass upon the requirements and fix the standards set by the legislature. If this were true, the composition of every professional board in the state of Indiana, including the board of law examiners, would offend the constitution. Whether or not the medical board is unfair and partial cannot be determined until the defendant meets the requirements as set by the board and applies for a license.

Accordingly, the judgment of the trial court sustaining the constitutionality of the medical practice act was affirmed.—*Lucas v. State ex rel Board of Medical Registration and Examination, 99 N.E. (2d) 419 (Indiana 1951).*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Indust. Hyg. & Occup. Med., Chicago

4:297-416 (Oct.) 1951

SYMPOSIUM ON CANCER CONTROL PROGRAM FOR HIGH-BOILING CATALYTICALLY CRACKED OILS

Teamwork in Control of Occupational Diseases: Introductory Statement. R. C. Page.—p. 297.
Experimental Analysis of Carcinogenic Activity of Certain Petroleum Products. W. E. Smith, D. A. Sunderland and K. Sugiura.—p. 299.
Properties of High-Boiling Petroleum Products: Physical and Chemical Properties as Related to Carcinogenic Activity. H. G. M. Fischer, W. Priestley Jr., L. T. Eby and others.—p. 315.
Cancer-Control Program for High-Boiling Catalytically Cracked Oils. J. P. Holt, N. V. Hendricks, R. E. Eckardt and others.—p. 325.
Properties of High-Boiling Petroleum Products: Quantitative Analysis of Tumor-Response Data Obtained from Application of Refinery Products to Skin of Mice. F. H. Blanding, W. H. King Jr., W. Priestley Jr. and J. Rehner Jr.—p. 335.
Lobar Deposition and Retention of Inhaled Insoluble Particulates. H. E. Stokinger, L. T. Steadman, H. B. Wilson and others.—p. 346.
Impingement of Dust from Air Jets. C. N. Davies, M. Aylward and D. Leacey.—p. 354.

A.M.A. Arch. Neurology and Psychiatry, Chicago

66:403-536 (Oct.) 1951

Absolute Measurement of Vibratory Threshold. E. C. Gregg Jr.—p. 403.
Analysis of Prognostic Factors in Insulin Therapy. M. Cohen.—p. 412.
Studies on Blood-Brain Barrier with Radioactive Phosphorus. L. Bakay.—p. 419.
Cytology of Rabbit Neurons After "Malononitrile" Administration. Chan-Nao Liu.—p. 427.
Comparative Psychological Study of Hyperkinetic and Akinetic Extrapyramidal Disorders. V. A. Kral and H. Dörken Jr.—p. 431.
Spontaneous Subarachnoid Hemorrhage Occurring in Noneclamptic Pregnancy. J. W. Conley and C. W. Rand.—p. 443.
*Efficacy of Aqueous Penicillin Alone and Combined with Other Modes in Advanced Dementia Paralytica: Five-Year Study. P. N. Brown.—p. 464.
Cryptococcus Meningitis (Torulosis) Treated with New Antibiotic, Actidione.® H. M. Wilson and A. W. Duryea.—p. 470.
Electroencephalographic Findings in Spinal Cord and Brain Stem Lesions. G. F. Perry and D. J. Simons.—p. 481.
Effect of Potassium on Electrocardiographic Abnormalities Produced During Insulin Shock. I. A. Kraft, H. Salzberg and J. A. Rosenkrantz.—p. 485.
racranial Metastasis of Sarcoma Botryoides. L. M. Friedland.—p. 491.
ateral and Bilateral Lobotomy: Controlled Evaluation. A. Simon, H. Margolis, J. E. Adams and K. M. Bowman.—p. 494.
troencephalogram in Multiple Sclerosis: Analysis of Series Submitted to Continuous Examinations and Discussion. V. Fuglsang-Frederiksen and P. Thygesen.—p. 504.

Penicillin and Other Treatment in Dementia Paralytica.—Five modes of treatment were used in 50 cases of severe dementia paralytica at the Ypsilanti State Hospital. Group 1 was treated with 4,000,000 units of aqueous penicillin in a dose of 20,000 units every two hours for 16⅔ days. Group 2 was given 4,000,000 units of penicillin in the same dosage as Group 1 and a course of therapeutic malaria. Group 3 received 4,000,000 units of penicillin in the same dosage, plus intravenous injections of arsenic alternated with administration of bismuth for one year. Group 4 was given 4,000,000 units of penicillin, a course of therapeutic malaria, and one year of chemotherapy. Group 5 served as a control, receiving a course of therapeutic malaria and chemotherapy. Throughout the investigation, serological tests were performed. This study revealed that for the severe dementia paralytica usually seen in state hospitals, penicillin combined with therapeutic malaria is the best treatment. A comparison of groups 2 and 4 indicated that at least in some cases of dementia paralytica chemotherapy is harmful.

A.M.A. Arch. Surgery, Chicago

63:413-584 (Oct.) 1951

Effect of Cortisone and Corticotrophin (ACTH) on Intra-Abdomina Adhesions. S. R. Scheinberg and H. C. Saltzstein.—p. 413.
Role of Cardiovascular Stress in Pathogenesis of Endocarditis and Glomerulonephritis: *Observations Including Method of Experimental Production Utilizing Arteriovenous Fistulas.* C. W. Lillehei, J. M. Shaffer, W. W. Spink and others.—p. 421.
Femoral Arteriovenous Anastomosis in Treatment of Occlusive Arterial Disease. D. E. Szilagyi, G. D. Jay III and E. D. Munnel.—p. 435.
Operative Treatment of Peripheral Aneurysms. J. J. Clear and L. G. Herrmann.—p. 452.
Leg and Thigh Amputations in Obliterative Arterial Disease. H. B. Shumacker Jr. and T. C. Moore.—p. 458.
Gasometric Studies in Carotid-Internal Jugular Anastomosis in Neck: Preliminary Report on Human Experiences. E. S. Gurdjian, J. E. Webster and F. Martin.—p. 466.
Complications and Effects Observed in Thirty-Three Patients with Cervical Arteriovenous Fistulas. J. M. Hammer, H. S. Heersma, J. R. MacGregor and others.—p. 477.
Syndrome of Leaking Duodenal Stump. B. B. Larsen and R. C. Foreman.—p. 480.
Pneumoarthrograms of Knee: Aid in Localization of Internal Derangement. J. K. Stack and R. C. Lockwood.—p. 486.
Consideration of Lethal Factors in Acute Pancreatitis. V. E. Siler and *J. H. Wulsin.—p. 496.*
Study of Types of Recurrence Following Inguinal Herniorrhaphy S. Zawacki and E. T. Thieme.—p. 505.
Slow Versus Rapid Intestinal Strangulation Obstruction. H. Laufman *W. E. Furr Jr. and* H. D. Roach.—p. 511.
Circulatory Disturbances Produced by Acute Intestinal Distention i *Living Animal. R. J. Noer, H. J. Robb and L. F. Jacobson.*—p. 520.
Surgical Jaundice in Infants and Children. E. W. Gerrish and J. W. Cole—p. 529.
*Biliary Tract Disease in the Aged. H. C. Fisher and H. MacM. White Jr—p. 536.
Localization of Radioactivity of Colloidal Gold^{198}: Preliminary Report H. F. Berg.—p. 545.
Radioactive Isotopes in Localization of Intracranial Lesions: Survey o Various Types of Isotopes and "Tagged Compounds" Useful in Diagnosis and Localization of Intracranial Lesions with Special Referenc to Use of Radioactive Iodine-Tagged Human Serum Albumin. S. N Chou, J. B. Aust, W. T. Peyton and G. E. Moore.—p. 554.
Use of Invert Sugar Solutions for Parenteral Feeding of Surgical Patients B. R. Lawton, A. R. Curreri and J. W. Gale.—p. 561.
Tryptic Débridement of Necrotic Tissue. H. G. Reiser, R. Patton an L. C. Roettig.—p. 568.
*Growth of Vascular Grafts in Growing Experimental Animals: Preliminary Report. T. C. Everson and H. W. Southwick.—p. 576.

Biliary Tract Disease in the Aged.—In patients over 70 who ha been operated on at the Denver General Hospital biliary tract disease ranked next to carcinoma of the stomach and colon in mor tality and next to repair of hernias in frequency. The records o elderly patients treated for biliary tract disease were reviewe and the following facts were revealed: 1. Biliary tract diseas in the aged is dangerous and occurs frequently. 2. The inc dence of cholelithiasis and the ratio of men to women with th disease increase with age. 3. The complications of cholelithias cause most of the deaths from biliary tract disease in this ag group. 4. Emergency operation has a high mortality and shoul be avoided if possible, yet the increased incidence of perfor tion emphasizes the need for considering emergency treatme for acute cholecystitis. 5. Elective cholecystectomy, with chol dochostomy if necessary, is well tolerated by elderly persons an should be performed during a quiescent period of the diseas to prevent further acute attacks and the dangerous complicatio of cholelithiasis. 6. Nonsurgical management is preferable whe other conditions increase the risk in surgery. 7. Postoperati complications, especially pulmonary infections, are frequent an dangerous in this age group, and adequate preoperative an postoperative care is necessary to lower the mortality. 8. Elder patients usually are benefited by either surgical or nonsurgic treatment, but those treated surgically have fewer continu symptoms and fewer complications of biliary tract disease.

Growth of Vascular Grafts in Animals.—*Venous and arteri* grafts have been used increasingly in the operative correction congenital vascular anomalies in infants and children. There i however, little or no evidence to indicate whether these vascul grafts grow as the patient increases in size. *To answer this que* tion, autogenous arterial, autogenous venous, and homologo

---

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

preserved arterial grafts were inserted into aortic defects in 10 young pigs to determine if the grafts would grow as the animals increased in size. All of three autogenous arterial grafts, two of four autogenous venous grafts, and two of three homologous preserved arterial grafts were patent when the animals were killed seven months later after having increased in weight eight to nine times. All grafts that remained patent grew in both length and diameter. More extensive studies are now in progress to determine if there is a statistically significant difference in incidence of occlusion between autogenous venous and homologous preserved arterial grafts in growing experimental animals.

American Journal of Clinical Pathology, Baltimore

21:799-900 (Sept.) 1951

*Effects of Cortisone on Bone Marrow in Hodgkin's Disease. R. S. Fadem, S. S. Berson, A. S. Jacobson and B. Straus.—p. 799.
Platelets and Coagulation Defect Caused by Dicumarol. F. D. Mann, M. Hurn and N. W. Barker.—p. 814.
Electrolytic Resistance of Blood Clot in Polycythemia Vera Before and After Radiation and Its Relationship to Clot Retraction. H. H. Henstell, I. S. Henstell and E. M. Ornitz Jr.—p. 820.
Excretion of P^{32} in Bile of Rabbits Following Intravenous Administration. F. B. Moreland, J. H. Gast and B. Halpert.—p. 828.
Serum Sodium and Potassium Values in 400 Normal Human Subjects, Determined by Beckman Flame Photometer. H. C. Elliott Jr. and H. L. Holley.—p. 831.
Technical Problems in Direct Tissue Studies with Electron Microscope. R. F. Dent Jr., M. Barhite and E. F. Geever.—p. 836.
Uptake of Radioiodine in Frozen Thyroid Carcinoma Tissues. W. N. Harsha and B. R. Harsha.—p. 842.

Effects of Cortisone on Bone Marrow in Hodgkin's Disease.—To determine the effects of cortisone in Hodgkin's disease, 10 patients were selected who had active, progressive Hodgkin's disease and who had received no therapy except blood transfusions and rest for one month. Adequate marrow examinations were possible in only six patients. Cortisone was administered, initially, in a daily dosage of 100 mg. for 21 days. Subsequent treatments with cortisone, nitrogen mustard, or other agents depended upon the condition of the patient. Bone marrow was obtained by aspiration from the sternum or the iliac crest. Each aspiration was made at a site at least 1 cm. removed from the site of earlier aspirations. The most prominent bone marrow changes were proliferation of erythrocytic, granulocytic, eosinophilic, and megakaryocytic elements, and of reticulum cells, associated in some instances with morphological abnormalities. It is doubted that these changes resulted from correction of a previously existing deficiency of the hormone. Rather, it is believed that cortisone exerted stimulatory influences upon growth of marrow cells and possibly prevented delivery or utilization of such cells in the peripheral blood. The development of giant cells of the Reed-Sternberg type in the marrow of three patients was also noted. This finding is interpreted as evidence that cortisone does not beneficially effect an important underlying mesenchymal disturbance in Hodgkin's disease.

21:901-998 (Oct.) 1951. Partial Index

Symposium on Blood Glucose. F. W. Sunderman, R. P. MacFate, G. T. Evans and J. B. Fuller.—p. 901.
Neurologic Lesions of Erythroblastosis Fetalis in Relation to Nuclear Deafness. W. B. Dublin.—p. 935.
Anaplastic Cells of Fetal Adrenal Cortex. J. M. Craig and B. H. Landing.—p. 940.
*Jaundice and False Positive Frog Tests for Pregnancy. H. Sobel and S. Edelman.—p. 950.
Use of Human Serum in in Vitro Tests for Virulence of Corynebacterium Diphtheriae. J. T. Hook and E. I. Parsons.—p. 979.
Direct Agar Culture Method for Testing Sensitivity of M. Tuberculosis to Streptomycin. L. R. Peizer, D. Widelock and C. Schechter.—p. 982.
Rapid Staining Procedure for Intestinal Amoebae and Flagellates. W. B. Wheatley.—p. 990.

Jaundice and False Positive Test for Pregnancy.—The male frog test for pregnancy was performed with urine of 21 jaundiced patients. The urine of nine patients, including men and women, contained a substance that caused a positive reaction. The positive tests were not necessarily associated with the presence of parenchymal liver damage nor related to the degree of jaundice. Patients whose urine did not give a positive reaction had similar types of obstructive and parenchymal jaundice with approximately similar ranges of the icterus index. The nature of the active material is as yet unknown. It is apparently quite labile. The activity seems to disappear if the material is kept on kaolin for several days.

American Journal of Tropical Medicine, Baltimore

31:535-672 (Sept.) 1951. Partial Index

Laboratory Comparison of United States and British Army Typhoid-Paratyphoid Vaccine. W. S. Miller, D. L. Clark and O. C. Dierkhising.—p. 535.
Efficiency of Zinc Sulfate Technic in Detection of Intestinal Protozoa by Successive Stool Examinations. J. E. Tobie, L. V. Reardon, J. Bozicevich and others.—p. 552.
Measurements of Direct Amebicidal Potential by Micro-Method for Screening of Drugs in Vitro. B. P. Phillips.—p. 561.
Aureomycin in Treatment of Intestinal Amebiasis: Report on 44 Cases. C. Calero.—p. 566.
Effect of Lapinone (M-2350) on P. Vivax Infection in Man. G. Fawax and F. S. Haddad.—p. 569.
*Role of House Fly, Musca Domestica, in Multiplication of Certain Enteric Bacteria. J. E. Hawley, L. R. Penner, S. E. Wedberg and W. L. Kulp.—p. 572.
Results Obtained in Testing Molluscacides in Field Plots Containing Oncomelania Nosophora, Intermediate Host of Schistosoma Japonicum. D. B. McMullen, S. Komiyama, N. Ishii and others.—p. 583.
Antibody Response in Egyptian Splenomegaly. M. A. Gohar, A. A. Eissa and I. Sebai.—p. 605.
Fresh-Water Cercarial Dermatitis from Southern California. W. L. Simmonds, W. E. Martin and E. D. Wagner.—p. 611.
Note on Filariasis Among the Natives of Okinawa, with Particular Reference to Possible Transmission of Wuchereria Bancrofti by Anopheles Hyrcanus Sinensis. T. W. Simpson.—p. 614.
Experimental Therapy of Onchocerciasis with Suramin and Hetrazan: Results of Three-Year Study. T. A. Burch and L. L. Ashburn.—p. 617.
Observations Based on Cutaneous Biopsies in Onchocerciasis. L. Mazzotti.—p. 624.
Production of Polyvalent Antivenin Against Trimeresurus Flavoviridis and Agkistrodon Blomhoffii Venoms. K. F. Burns.—p. 665.

Housefly and Multiplication of Enteric Bacteria.—Most writers have assumed a mechanical transmission of bacteria on the body of the housefly, and some have studied the possibility of multiplication of bacterial organisms in flies following ingestion of such organisms. Normal stool flora studies were conducted on 36 houseflies. While the presence of soil and water species of bacteria was common, Proteus morganii was isolated from 28 of the 36 flies studied, and Aerobacter aerogenes was found in 20 of the 36 flies. Mounted flies were fed daily with sterile 0.5 molar sucrose solution and sterile skim milk from potometers. Droppings were collected in the tubes containing 2.0 ml. of isotonic sodium chloride solution or on the surface of non-nutrient agar plates from which isolation of the specific test organisms was attempted. Of 132 domestic flies investigated in controlled feeding experiments, 36 were fed known numbers of Escherichia coli, 48 were given measured amounts of Salmonella schottmülleri, and another group of 48 flies received known numbers of Shigella dysenteriae in an effort to determine passage of the test species of bacteria through the digestive tract of the flies. Flies in groups of 12 fed small numbers (less than 1,000) of the specified organisms in a single feeding apparently do not pass these bacteria in their stools, but as the numbers of ingested bacteria increase, decided multiplication occurs within the insects, as evidenced by the excretion of significantly greater numbers of the test species than were initially fed.

Am. Practitioner & Digest of Treatment, Philadelphia

2:745-832 (Sept.) 1951

Evaluation of Liver Biopsy as Diagnostic Procedure. C. Cassel, F. C. Bone, J. M. Ruffin and L. D. Stoddard.—p. 745.
Headache Clinic III: Endocrine Therapy in Migraine. L. S. Blumenthal and M. Fuchs.—p. 755.
Blinding Diseases of the World—Treatment. A. A. Knapp.—p. 758.
*Erythema Nodosum: Analysis of 50 Cases and Review of Literature. E. Wasserman and J. Yules.—p. 772.
Modern Advances in Diagnosis and Treatment of Convulsive Disorders. R. B. Aird.—p. 777.
Chloromycetin in "Healthy Carriers" of Endamoeba Histolytica. A. P. Coronel.—p. 782.
Topical Use of Penicillin Ointment in Treatment of Chronic Bartholin Cyst Infection. A. Jablonsky.—p. 784.
Primary Sarcoma of Heart: Report of Case Associated with Metastatic Calcification. P. H. Ringer Jr. and W. J. McDermid.—p. 786.
Management of the Complaining Patient: Method of Intensive Psychotherapy. R. L. Sutherland.—p. 792.

Erythema Nodosum.—Fifty cases in which the diagnosis of erythema nodosum was unequivocal were selected at random from admissions to the Boston City Hospital from 1941 to 1951. The clinical and laboratory features of these 50 patients are presented. The disease was much more frequent in females (42) than in males (8). The ages of the patients ranged from 18 to 73 years. Seventy per cent of the patients had associated respiratory infections, a fact which is in accord with other reports from the same geographic area. The former concept that erythema nodosum is a manifestation of tuberculosis and rheumatic fever can no longer be supported, in view of recent observations, including those in this group, in which only one patient had coexisting tuberculosis and only four had rheumatic fever. Dental infection (in 12%), ulcerative colitis (in 4%), and gonorrhea (in 4%) were present in a higher incidence than previously noted in the literature. Bromide sensitivity was responsible for erythema nodosum in one patient. Sulfonamide sensitivity, pulmonary hilar lymphadenopathy, and generalized lymphadenopathy were noted in proportions similar to those already reported. The authors feel that erythema nodosum may be considered a disease of hypersensitivity often associated with infectious and chemical agents. Geographic location appears to determine the specific causative factors associated with this condition. Tuberculosis and rheumatic fever are not commonly found in association with erythema nodosum in this area.

American Review of Tuberculosis, New York

64:327-476 (Oct.) 1951

*Tuberculomas of Mediastinum. C. F. Storey and H. A. Lyons.—p. 327.
Enumeration of Viable Tubercle Bacilli by Surface Plate Counts. F. Fenner.—p. 353.
Study of Relation of Nutrition to Development of Tuberculosis: Influence of Ascorbic Acid and Vitamin A. H. R. Getz, E. R. Long and H. J. Henderson.—p. 381.
Bronchography in Pulmonary Tuberculosis: With Histopathologic Correlation in 82 Resections. M. G. Buckles, W. L. Potts, H. B. Davidson and W. B. Neptune.—p. 394.
Tuberculous Meningitis: Correlation of Therapeutic Results with Pathogenesis and Pathologic Changes: I. General Considerations and Pathogenesis. O. Auerbach.—p. 408.
*Id.: II. Pathologic Changes in Untreated and Treated Cases. O. Auerbach.—p. 419.
Chemotherapy as Prophylaxis Against Secondary Intestinal Tuberculosis: Report of 150 Autopsies. I. Källqvist.—p. 430.
Attempts to Heighten Effect of BCG Vaccination with Hyaluronidase. S. Bergqvist.—p. 442.
Plasma Concentrations of Para-Aminosalicylic Acid (PAS) After Oral and Rectal Administration as Influenced by p-(Di-n-Propylsulfamyl)-Benzoic Acid (Benemid). C. W. Rieber, M. Saline and M. M. Friedman.—p. 448.
Effect of Prolonged Administration of p-(Di-n-Propylsulfamyl)-Benzoic Acid (Benemid) upon Plasma Concentrations of Para-Aminosalicylic Acid. H. L. Israel, F. Mick and W. P. Boger.—p. 453.
Importance of Respiratory Diseases. A. D. Langmuir.—p. 461.

stinal Tuberculomas.—The occurrence of mediastinal tuberculoma is reported in six men between 20 and 30 who were on active duty in the armed forces. Only one of the six patients had symptoms referable to the mediastinal mass, which in four was discovered on routine chest roentgenograms. In five of these six cases and in five of eight cases previously reported by other workers, the masses were located in the midplane of the chest immediately above the level of the transverse portion of the azygos vein. The presence of an oval or spherical, smoothly outlined, and sharply circumscribed mass of homogeneous density, or containing calcium deposits, projecting to the right from the mediastinum in the aforementioned position, strongly suggests a diagnosis of mediastinal tuberculoma. A history of tuberculosis, other evidence of that disease, and/or a positive tuberculin reaction (as in two of the authors' patients) would make the diagnosis more likely. As there is no method of making a positive diagnosis preoperatively, it is believed that most of these patients should be subjected to exploratory thoracotomy, which was performed in the authors' patients. The mass should be removed at the time of surgical intervention if it can be accomplished with reasonable safety. The mass was excised in five of the authors' cases. Two of the lesions showed active chronic granulomatous processes with tubercle formation but no acid-fast bacilli. In the three others no normal architecture remained, so that it was impossible to prove that the lesions had arisen from chronic granulomatous lymphadenitis, but acid-fast bacilli were demonstrated in the caseous centers of two lesions. At present tuberculoma appears to be an acceptable descriptive term for lesions of this kind. Postoperative management consisted of strict bed rest for three months, and of bed rest interrupted by progressively longer periods out of bed for an additional three months. Streptomycin in doses of 1 gm. daily and *p*-aminosalicylic acid in doses of 12 gm. daily were given postoperatively for six weeks to four months. Of the six patients, five had been returned to full duty, and the sixth is expetecd to be returned to full duty after six months of postoperative rest.

Tuberculous Meningitis.—Pathological findings in 64 cases of tuberculous meningitis treated with streptomycin for periods of from one day to 25 months were compared with findings in untreated cases in an attempt to correlate the therapeutic effect with the pathogenesis and pathological changes of the disease. The survival period in untreated cases of tuberculous meningitis is usually less than three weeks, too short a time for extensive caseation and granulation tissue to develop. With streptomycin therapy the exudate within the subarachnoid space undergoes extensive necrosis that encircles and partially involves the vessel walls in a similar process. Concomitantly there is fibrous thickening of the intima of the enclosed blood vessels. Tuberculous granulation tissue from the piarachnoid replaces the remaining fibrinocellular exudate in the subarachnoid space so that, with prolonged therapy, the base of the brain becomes covered by a dense layer of hyalinized connective tissue that encloses necrotic foci. Streptomycin therapy has introduced a new phase in treatment of tuberculosis meningitis. The drug prolongs the natural course of the disease and causes extensive healing within the exudate. Since the source of dissemination to the meninges in children with tuberculous meningitis is eliminated by healing of the primary infection, successful results with streptomycin therapy appear more likely in children than in adults. In adults the meningitis is usually secondary to active extrapulmonary tuberculosis that gives rise to repeated hematogenous dissemination. That repeated infections of the meninges occur in adults is suggested by the presence of all stages of the healing process and also by the presence of fresh exudate over the convexity of the brain and surrounding the spinal cord. Repeated relapses in the course of streptomycin therapy may be related to the appearance of fresh foci of inflammation in the subarachnoid space.

Bulletin of Johns Hopkins Hospital, Baltimore

89:263-338 (Oct.) 1951

*Muscular Wasting of Obscure Origin and Thyroid Gland. K. L. Zierler.—p. 263.
Vectorcardiographic Study of "Q3" Deflection in Cases of Myocardial Infarction and in Normal Subjects. W. R. Milnor, A. Genecin, S. A. Talbot and E. V. Newman.—p. 281.
Effect of Cortisone on Primary and Secondary Aqueous and on Corneal Vascularization in Rabbits. S. R. Irvine and M. D. Irvine.—p. 288.
Tissue Culture Studies on Liver Cells of Tuberculin Sensitized Animals in Presence of Tuberculin (Purified Protein Derivative). J. J. Buckley S. M. Buckley and M. L. Keeve.—p. 303.
Non-Traumatic Aortic Valve Rupture. D. Carroll.—p. 309.
Hepatitis in Mice, of Presumed Viral Origin: Preliminary Report. J. Jordan and G. S. Mirick.—p. 326.

Muscular Wasting in Thyroid Disease.—Although it is unlikel that muscle is ever unaffected in hyperthyroidism, cases in whic muscle involvement is the most prominent symptom have bee subclassified as examples of thyrotoxic myopathy. Many feature of chronic thyrotoxic myopathy are suggestive of "apathetic thyroidism" as described by Lahey. Previous reports show that muscular wasting with thyroid disease is observed almost exclusivel in patients over 40 or 50 years of age. Zierler observed 1 patients over 40 in whom the principal manifestation of hyperthyroidism was great muscular wasting. These patients complained chiefly of anorexia, weakness, and weight loss. Exophthalmos, thyropathic eye signs, and goiter were not demonstrabl or were not pronounced in most cases. A curious pattern o creatine metabolism appeared in these patients, characterize by hypocreatininuria, impaired creatine tolerance, and surprisingly slight spontaneous creatinuria. So consistent was this pattern that it became an indication for therapeutic trial. Althoug the pattern also occurs with myotonic dystrophy and Addison' disease, adrenocortical insufficiency in these older hyperthyroi patients could not be demonstrated. A possible explanation o these findings is that the rate of synthesis of creatine is decreased in the three clinical conditions in which the anomalou pattern has been noted. Convincing demonstration of hyperthyroidism depended on response to therapy. Rapid recover of weight and restoration of strength occurred uniformly durin administration of strong iodine (Lugol's) solution or of *n*-propylthiouracil or of both.

Circulation, New York

4:321-480 (Sept.) 1951

Cardiodynamic Effects of Mitral Commissurotomy. E. R. Munnell and C. R. Lam.—p. 321.
Transposition of Aorta and Pulmonary Artery. M. Campbell and S. Suzman.—p. 329.
Dynamics of Eisenmenger's Complex: Integration of Pathologic, Physiologic and Clinical Features. H. Goldberg, E. N. Silber, A. Gordon and L. N. Katz.—p. 343.
Nitroglycerin-Flicker Test. E. L. Fox and I. S. Wright.—p. 350.
Significance of Nitroglycerin-Flicker Fusion Response in Normal Subjects and Patients with Cardiovascular Disease. H. I. Russek, W. H. Anderson and A. A. Doerner.—p. 359.
Some Effects of Digoxin on Heart and Circulation in Man: Digoxin in Enlarged Hearts Not in Clinical Congestive Failure. R. M. Harvey, M. I. Ferrer, R. T. Cathcart and J. K. Alexander.—p. 366.
Effect of Intravenously Administered Digoxin on Water and Electrolyte Excretion and on Renal Functions. S. J. Farber, J. D. Alexander, E. D. Pellegrino and D. P. Earle.—p. 378.
*Study of Effect of Procaine Amide Hydrochloride in Supraventricular Arrhythmias. M. C. McCord and J. T. Taguchi.—p. 387.
New Tolerance Test as Guide to Clinical Heparin Therapy. R. S. McCleery and J. A. Yarborough.—p. 394.
Lumbar Sympathectomy for Peripheral Arteriosclerosis. F. L. Pearl and L. D. Rosenman.—p. 402.
Evaluation of Anticoagulant Therapy in Congestive Heart Failure. D. C. Levinson and G. C. Griffith.—p. 416.
Unipolar Precordial and Extremity Electrocardiogram in Normal Infants and Children. M. M. Alimurung, L. G. Joseph, A. S. Nadas and B. F. Massell.—p. 420.
Management of Cardiac Patients in Relation to Surgery. A. C. Ernstene. —p. 430.

4:483-640 (Oct.) 1951

Relief of Acute Right Ventricular Strain by Production of Interatrial Septal Defect. G. A. Brecher and D. F. Opdyke.—p. 496.
Recommendations for Human Blood Pressure Determinations by Sphygmomanometers. J. Bordley III, C. A. R. Connor, W. F. Hamilton and others.—p. 503.
Study of Central and Peripheral Arterial Pressure Pulse in Man: Correlation with Simultaneously Recorded Electrokymograms. A. H. Salans, L. N. Katz, G. R. Graham and others.—p. 510.
Quinidine Lactate and Gluconate in Suppression of Ectopic Ventricular Tachycardias Associated with Myocardial Infarction: Control of Toxicity by Morphine. A. S. Harris, A. Estandía, T. J. Ford Jr. and R. F. Tillotson.—p. 522.
Studies of Antiadrenergic Effects of Nitroglycerin on Dog Heart. R. W. Eckstein, W. B. Newberry, J. A. McEachen and G. Smith.—p. 534.
Effect of Pulse Pressure and Mean Arterial Pressure Modification on Renal Hemodynamics and Electrolyte and Water Excretion. E. E. Selkurt.—p. 541.
Determination of Cardiac Output by Continuous Recording System Utilizing Iodinated (I^{131}) Human Serum Albumin: I. Animal Studies. W. J. MacIntyre, W. H. Pritchard, R. W. Eckstein and H. L. Fridell.—p. 552.
Macrophage Migration in Experimental Atherosclerosis. J. H. Simonton and J. W. Gofman.—p. 557.
Peripheral Vasomotor Effects of Adrenaline and Noradrenaline Acting upon Isolated Perfused Central Nervous System. R. D. Taylor and I. H. Page.—p. 563.
Effect of Cycle Length on Time of Occurrence of First Heart Sound and Opening Snap in Mitral Stenosis. A. L. Messer, T. B. Counihan, M. B. Rappaport and H. B. Sprague.—p. 576.
New Aspects of Blood Pressure Regulation. C. Heymans and G. van den Heuvel-Heymans.—p. 581.
Experimental Production of Diffuse Proliferative Glomerulonephritis Utilizing Arteriovenous Fistula Stress with Bacteremia. C. W. Lillehei, J. R. R. Bobb, D. Wargo and others.—p. 587.
Quantitative Electrokymograph. R. H. Morgan and R. E. Sturm.—p. 604.

Procaine Amide Hydrochloride in Supraventricular Arrhythmias.—Procaine amide hydrochloride has proved of value in cardiac arrhythmias of ventricular origin but is considered as having little effect on the auricles. The present report, however, describes the results of the intravenous administration of procaine amide in 25 patients with cardiac arrhythmias of supraventricular origin. The drug, which comes in 10 cc. vials, was diluted to 30 cc. with isotonic solution of sodium chloride and was administered intravenously. Electrocardiographic control was maintained continuously for variable periods following administration. A pronounced effect on the auricles was demonstrated by the following findings: (a) conversion to normal sinus rhythm in six cases of auricular fibrillation and in three cases of supraventricular tachycardia; (b) elimination of premature auricular contractions in one patient; and (c) marked slowing and changes in the configuration of the auricular waves in seven other patients. In four patients with auricular flutter conversion to normal sinus rhythm was not achieved. Other electrocardiographic evidence of the effect of this drug on the heart was demonstrated in nearly all patients by mild to marked degrees of QRS and QT interval prolongation. An increase in ventricular rate in auricular fibrillation and a decrease in auricular-ventricular ratio in auricular flutter was a constant finding. "Toxic" or undesirable changes were observed in eight patients. Considerable variation in individual sensitivity to procaine amide and the frequency of unfavorable manifestations make necessary careful electrocardiographic and blood pressure control during intravenous administration of this drug.

Diseases of Chest, Chicago

20:347-452 (Oct.) 1951

Bronchial Adenoma: Follow-Up Report After 35 Years. C. Jackson. —p. 347.
*Role of Bronchoscopy in Diagnosis and Treatment of Bronchial Adenoma. C. L. Jackson and C. M. Norris.—p. 353.
Diffuse Interstitial Fibrosis of Lungs (Report of Case with Unusual Features). H. L. Katz and O. Auerbach.—p. 366.
Cardio-Respiratory Studies in Pre and Post Operative Funnel Chest (Pectus Excavatum). A. L. Brown and O. Cook.—p. 378.
Streptomycin as Adjunct to Therapy of Pulmonary Tuberculosis: Long Term Study. K. A. Harden, H. M. Payne, H. V. McKnight and N. P. Gillem.—p. 392.
Postural Rest in Pulmonary Tuberculosis. B. A. Dormer, E. Greathead, G. Pirrie and others.—p. 407.
Treatment of Giant Tuberculous Cavities. P. Ottosen, C. Popp, A. J. Beatty and W. W. Buckingham.—p. 420.
*Familial Pulmonary Fibrosis. J. M. MacMillan.—p. 426.
Medical Treatment of Abscess of Lungs. T. Saglam.—p. 437.

Bronchoscopy in Bronchial Adenoma.—The authors report on 36 patients, 25 women and 11 men, with a "carcinoid" type of bronchial adenoma, and on four patients, two women and two men, with a "cylindroma" type of bronchial adenoma. Of the first group of patients, 24 were treated by bronchoscopic removal and all but two whose status is not known are well. Lobectomy was performed in eight, of whom one died postoperatively and seven are well. Pneumonectomy was performed in three, of whom one died postoperatively and two are well. Biopsy alone was performed in one patient who was not followed. Bronchoscopic removal was also performed in the four patients with the cylindroma type of adenoma. Two of them died despite palliative bronchoscopic treatment, and two are asymptomatic although they still require treatment. Bronchoscopic removal is curative and constitutes efficacious preoperative or palliative treatment in bronchial adenoma. Bronchoscopy is also important in the diagnosis, visualization, and biopsy of these tumors. The main source of confusion with regard to bronchial adenoma is the histopathology. Subdivision into various types like carcinoid and cylindroma is useful. Each case of adenoma should be studied individually to select the particular method of treatment. Resection should not be performed automatically as is usually done for carcinoma.

Familial Pulmonary Fibrosis.—The term familial pulmonary fibrosis designates a new disease entity that may be a familial response to chronic pulmonary trauma of an infectious or inorganic nature manifested in bilateral symmetrical involvement. Three familial groups are discussed in whom a diagnosis of pulmonary tuberculosis was not justified on the basis of examination and chest roentgenograms. Recent fibrosis was revealed in lung sections of the mother and daughter in the first group. The family history revealed that the mother's father and two sisters supposedly had died of pulmonary tuberculosis. The second group included two women, identical twins, with interstitial fibrosis of the lungs. Chest roentgenograms were interpreted as showing bilateral infiltration suggestive of fibrosis in two sisters of the third familial group. In familial pulmonary fibrosis the constitutional factor seems to be of great importance. The age of occurrence is from 30 to 55 years, and once the disease has manifested itself clinically, it usually progresses to death. Clinical characteristics are dyspnea, orthopnea, chronic cough, and cyanosis associated with minimal lung findings. Cor pulmonale may be a terminal change rather than a part of the disease. It is still too early to make positive statements with regard to therapy; potassium iodine seems to exert a beneficial inhibiting effect. A history of familial pulmonary fibrosis and inquiry into the manner of death of members of the family may provide more accurate information than questions referring to the presumed diagnosis.

Gastroenterology, Baltimore

19:1-190 (Sept.) 1951

Abdominal Masses: I. Survey of Their Incidence and Clinical Significance. D. B. Butler and J. A. Bargen.—p. 1.
Id.: II. Diseases of Alimentary Tract: Carcinoma of Stomach, Carcinoma of Colon, and Lymphosarcoma of Alimentary Tract. D. B. Butler and J. A. Bargen.—p. 13.
Id.: III. Diseases of Liver, Pancreas, and Spleen: Metastatic Tumors of Liver, Acute Cholecystitis, Obstruction of Common Bile Duct, Hepatic Cirrhosis, Tumors of Pancreas, and Banti's Disease. D. B. Butler and J. A. Bargen.—p. 32.
*Malignant Degeneration in Chronic Ulcerative Colitis. E. D. Kiefer, E. J. Eytinge and A. C. Johnson.—p. 51.
*Treatment of Acute Ulcerative Colitis by Ileostomy and Simultaneous Colectomy. G. Crile Jr. and C. Y. Thomas Jr.—p. 58.
Chloramphenicol (Chloromycetin) in Treatment of Viral Hepatitis. L. Hall and G. K. Wharton.—p. 69.
Emphysema of Colon (Pneumatosis Cystoides Intestinalis): Case Report and Review of the British and American Literature. P. G. Creese. —p. 75.
Simple Measure of Gastric Secretion in Man: Comparison of One Hour Basal Secretion, Histamine-Secretion and Twelve Hour Nocturnal Gastric Secretion. E. Levin, J. B. Kirsner and W. L. Palmer.—p. 88.
Study of Significance of Reactive Hypoglycemia Following Gastrectomy. T. J. Butler.—p. 99.
Massive Gastrointestinal Hemorrhage: Experimental Observations. A. Sachs, C. M. Wilhelmj, H. C. Struck and others.—p. 113.
Cephalic Phase of Gastric Secretion Following Partial Gastrectomy. O. Noring.—p. 118.
Pharmacological and Clinical Studies with Antispasmodics and Local Anesthetics on Upper Digestive Tract. G. P. Child.—p. 126.

Malignant Degeneration in Ulcerative Colitis.—Knowledge of the expected incidence of carcinoma of the large bowel in patients with chronic ulcerative colitis is important for selection of proper treatment. To determine this incidence the authors studied 214 patients who had undergone total or partial resection of colon and rectum for ulcerative colitis and an additional 12 who came to autopsy. Another 458 patients were studied by sigmoidoscopy and roentgenography, but in these the diagnosis was considered incompletely verified because the colons were not available for pathologic examination. In the 226 verified cases there were 10 instances of cancer of colon or rectum, and in the 458 unverified cases 9 cancers occurred. The total number of person-years of colitis was computed from the date of onset of the colitis until the date of death, operation, or examination. Expected values were computed by comparing to the person-years the average annual incidence rates published for the ate of New York for cancer of the colon, rectum, and recto- oid. The results indicate that cancer was observed 66 times 31 times more frequently than would be expected in the me age groups of the general population. It is concluded that chronic ulcerative colitis predisposes to cancer in younger persons, especially when the colitis has existed for 10 years or longer.

Treatment of Acute Toxic Ulcerative Colitis.—In a series of 675 cases of ulcerative colitis observed at the Cleveland Clinic there were only 31 cases with acute toxic manifestations. When the records of these patients were analyzed from two to nine years after their initial admission, it was found that 21, or about two-thirds had died. Eight of these deaths occurred in the 11 patients who had acute toxic ulcerative colitis of less than six months' duration; the remaining 13 deaths occurred in the 20 patients with an acute exacerbation of chronic ulcerative colitis. Dividing the cases according to whether the patients had medical treatment only or medical treatment and ileostomy, it was found that 10 of the 16 patients treated by ileostomy died as compared to 11 of the 15 treated only by medical means. Only two of the four surviving medically treated patients are able to work, as compared to all of the five subjected to ileostomy and subsequent colectomy. Patients with acute toxic ulcerative colitis whose colons are not removed are not often able to resume their activities. Patients with acute toxic ulcerative colitis should not be subjected to the minimal operation of ileostomy, which may cause the least shock but also results in the least improvement, but to the maximum operation of subtotal colectomy, which causes prompt improvement. Patients with acute toxic ulcerative colitis die oftener as a result of their disease than as a result of operation. Even extensive operations are tolerated well if the disease is eradicated. The more seriously ill the patient the more urgent are the indications for simultaneous subtotal colectomy and ileostomy.

Geriatrics, Minneapolis

6:277-346 (Sept.-Oct.) 1951. **Partial Index**

Gastric Surgery in the Aged. W. E. Branch.—p. 277.
X-Ray Study of Bowel Function in the Aged. L. Wechsler, L. A. Kessle and M. F. Goldsmith.—p. 293.
Sexual Function in the Aging Male. W. R. Stokes.—p. 304.
Studies in Atherosclerosis: VIII. Prophylaxis of Atherosclerosis Through Stabilization of Blood Cholesterol. O. J. Pollak.—p. 309.
*Metrazol in Arteriosclerosis Associated with Senility. E. J. Chesrow, A. J. Giacobe and P. H. Wosika.—p. 319.

Metrazol® in Arteriosclerosis Associated with Senility.—The care of aged patients with advanced arteriosclerosis, who often are not only bedridden but mentally confused, is difficult. Special diets, glucose, proteins, and various vitamins, as well as stimulants, such as caffeine and ephedrine, have been tried with little success. At the suggestion of Urse pentylenetetrazole (metrazol®) was used in such cases. The changes produced by this drug in the electroencephalogram are probably due to a combination of increased synaptic transmission and general analeptic effects. By stimulating the respiratory center, the drug was expected to improve pulmonary ventilation and circulation, and so help to overcome anoxia. It was expected to act as a general tonic by its analeptic effect and by increasing nerve impulse transmission. Thirty-two patients with advanced arteriosclerosis, many of whom were almost psychotic, were treated. Their ages ranged from 65 to 90, with an average of 74. Pentylenetetrazole wa given orally for a minimum of 90 days. The average dose wa 1 or 2 tablets (0.1 to 0.2 gm.) four times a day, but doses up to 3 and 4 tablets four times a day were used at times. Of the 3 patients, 26 showed at least some improvement and 12 showe pronounced improvement. Fatigue and mental confusion wer reduced to the extent that these patients were again able t enjoy life, while nursing care was made much simpler. Ther were almost no side-effects, except nausea and vomiting in few patients who received large doses. Pentylenetetrazole (metrazol®) seems an effective and safe analeptic of definite value i geriatric practice.

Illinois Medical Journal, Chicago

100:221-272 (Oct.) 1951

*Treatment of Sub-Acute Bacterial Endocarditis with Massive Doses Procaine Penicillin in Oil. M. M. Chertack, W. R. Best and F. K. Hic —p. 228.
Office Psychiatry. F. G. Norbury.—p. 232.
Use of Anticoagulant Therapy in Medicine. N. B. Roberg.—p. 234.
Lansing Poliomyelitis Virus Neutralizing Antibody Titers of Differe Types of Human Serum. S. O. Levinson, A. Milzer and A. M. Wo —p. 238.
Trends in Management of Appendicitis in Children. P. F. Fox.—p. 24
Retrolental Fibroplasia. M. L. Newman.—p. 245.
*Clinical Results Obtained with Reichstein's Compound. J. Peters.—p. 24
Superficial Fungus Infections—Direct Mount and Culture in Tinea Ped D. Cohen and M. Goldin.—p. 252.
Mechanism and Treatment of Pulmonary Edema. A. A. Luisada.—p. 2
Tuberculosis X-Ray Survey as Medium for Early Diagnosis of Ch Malignancy. G. H. Gowen.—p. 257.
Association of Masculinizing Tumor of Ovary and Pregnancy. W. Young.—p. 263.
Tuberculous Appendicitis. T. M. Larkowski and A. R. Rosanova.—p. 2

Penicillin in Bacterial Endocarditis.—Chertack, Best, and Hi attempted to eliminate bacteriologic therapeutic failures and minimize permanent damage to the valves in subacute bacteri endocarditis by intramuscular administration of 2 cc. (800,0 units) of procaine penicillin in oil to five patients every two ho day and night for 30 days. The total dosage was 288,000,0 units or 720 cc. Carinamide was also given in some cases a proved to be of value in elevating penicillin blood levels. tients were not restricted to bed rest. Slight allergic reactio in two cases were easily controlled. A bacteriologic cure w obtained in each case, but one patient died of acute myocard infarction on the 18th day of treatment.

Reichstein's Compound.—Reichstein's Compound S, which d fers from cortisone only in that it lacks the oxygen molecule C-11, was used by Peters in treatment of lupus erythemato disseminatus; chronic urticaria complicated by convulsio psoriasis, and bronchial asthma that had not responded to usual treatments. Initial results were good; appetite improv strength returned, mental capacity and activity increased, a the patients had a sense of well-being. The laboratory findings showed either a decrease or a complete disappearance of circulatory eosinophils. The results in these cases indicate the relationship between the endocrine glands and the nervous system; further study of their interaction may result in a new concept of the meaning of disease and provide a different approach to its management.

Journal of Applied Physiology, Washington, D. C.

4:161-244 (Sept.) 1951

Changes in Blood Pressure in Response to Presumably Painful Stimuli. F. R. Goetzl, C. W. Bien and G. Lu.—p. 161.
Value of Intraoral Pressure as Measure of Intrapleural Pressure. E. I. Elisberg, H. Goldberg and G. L. Snider.—p. 171.
Estimation of Cardiac Output by Dye Dilution Method with Ear Oximeter. E. F. Beard and E. H. Wood.—p. 177.
Effect of Light-Dark Ratio on Fusion Frequency of Flicker. P. Winchell and E. Simonson.—p. 188.
Influence of Analgesics, Dromoran, Nisentil and Morphine, on Pain Thresholds in Man. R. E. Lee and C. C. Pfeiffer.—p. 193.
Physiological Responses of Hands and Feet to Cold in Relation to Body Temperature. C. H. Wyndham and W. G. Wilson-Dickson.—p. 199.
Evaporative Rate Patterns from Small Skin Areas as Measured by Infrared Gas Analyzer. R. E. Albert and E. D. Palmes.—p. 208.
Use of Audio-Amplifier as Means of Facilitating Work Output: Strength Development Through a Program of Progressive Resistance Exercise. A. S. Hoye.—p. 215.
Effect in Normal Man of Hyperglycemia and Glycosuria on Excretion and Reabsorption of Phosphate. B. A. Levitan.—p. 224.
Sources of Error in Plasma Creatinine Determination. H. D. Lauson. —p. 227.

Journal Clin. Endocrinology, Springfield, Ill.

11:1045-1214 (Oct.) 1951

Use of Antithyroid Drugs During Pregnancy. E. B. Astwood.—p. 1045.
*1-Methyl-2-Mercaptoimidazole: New Active Antithyroid Agent. E. C. Bartels and R. W. Sjogren.—p. 1057.
Column Chromatography of Thyroid Gland Hydrolysates. I. N. Rosenberg.—p. 1063.
Effect of Thyrotropin on Release of Hormone from Human Thyroid. R. E. Goldsmith, J. B. Stanbury and G. L. Brownell.—p. 1079.
Analysis of Techniques for Determination of Thyroid Function with Radioiodine. G. L. Brownell.—p. 1095.
Effect of Thyroid-Stimulating Hormone in Acute Thyroiditis. J. Robbins, J. E. Rall, J. B. Trunnell and R. W. Rawson.—p. 1106.
Radioiodine Studies in Thyroiditis. W. M. McConahey and F. R. Keating Jr.—p. 1116.
Classification of Thyroiditis, with Special Reference to Use of Needle Biopsy. G. Crile Jr. and J. B. Hazard.—p. 1123.
*Limitations and Indications in Treatment of Cancer of Thyroid with Radioactive Iodine. R. W. Rawson, J. E. Rall and W. Peacock. —p. 1128.
Tracer Dose of Radioactive Iodine in Diagnosis of Thyroid Disease. L. Seed, B. Jaffé and C. Baumeister.—p. 1143.
Nodular Goiter and Malignant Lesions of Thyroid Gland. O. H. Beahrs, J. deJ. Pemberton and B. M. Black.—p. 1157.
*Carcinoma of Thyroid Gland in Youth. R. C. Horn Jr. and I. S. Ravdin. —p. 1166.
Recurrent and Persistent Hyperthyroidism. W. Bartlett Jr.—p. 1179.
Study of Ankle Jerk in Myxedema. E. H. Lambert, L. O. Underdahl, S. Beckett and L. O. Mederos.—p. 1186.

New Antithyroid Agent.—Eighty-two patients with primary hyperthyroidism and 18 with hyperthyroidism due to an adenomatous goiter were treated with methimazole ("tapazole"). Of these 100 patients, 93 received methimazole in preparation for a subtotal thyroidectomy and 7 patients received it as maintenance medical treatment. The doses used were 20 to 30 mg. for patients with primary hyperthyroidism and 30 to 40 mg. for patients with adenomatous goiters, the size of the goiter determining the size of the dose. Of the 93 patients receiving the drug in preparation for thyroidectomy, 56 were treated for 40 to 70 days, 23 for less than 40 days, and 14 for more than 70 days. All of the seven patients on maintenance treatment with methimazole in doses of 2.5 to 5 mg. per day for periods of 10 to 17 months are now euthyroid. Clinically methimazole was observed to be 10 times as active as propylthiouracil. Of the 100 patients, 6 had skin reactions to the drug, which in 3 patients necessitated discontinuation of the treatment; in the other 3 treatment with methimazole was continued with reduction of the dose or addition of an antihistaminic drug. Myxedema occurred in two patients with primary hyperthyroidism. An elevated plasma cholesterol level suggests presence of myxedema before symptoms are produced. The results obtained with methimazole in these patients indicate that it is an active antithyroid substance. The incidence of untoward reactions was higher than with propylthiouracil, but none of the reactions was serious and agranulocytosis was not observed. Since the completion of the authors' study, one patient was observed in whom severe granulocytopenia developed, indicating that methimazole also has toxic potentialities.

Treatment of Thyroid Cancer with Radioactive Iodine.—Radioiodine tracer studies on 146 patients with cancer of the thyroid indicated that it was desirable and possible to administer radioactive iodine therapeutically to 20. Objective improvement as evidenced by microscopic or roentgenographic evidence of tumor destruction was observed in 10. The major limitations to this treatment were as follows: (1) The relative to absolute lack of natural avidity for I^{131} of almost all cancers of the thyroid and the natural variability in function of those tumors which do concentrate radioiodine; (2) the previous interference with the natural or induced avidity for radioiodine of certain tumors by the administration of iodine or iodine-containing drugs or by the administration of noncancericidal amounts of isotopic or roentgen ray radiation; and (3) the damaging effects of radiation from radioiodine on normal and vital tissues such as the blood and blood-forming organs. In view of these limitations, the indications for the treatment of cancer of the thyroid with radioactive iodine were defined as follows: (1) that the tumor be not removable; (2) that the tumor be capable of concentrating enough radioactive iodine to exert a cancericidal effect; and (3) that the calculated total blood irradiation delivered by the proposed therapeutic dose of I^{131} be within the range of safety, i. e., less than 500 roentgen equivalents physical. Every candidate for treatment with large doses of I^{131} should be subjected previously to tracer studies with daily determinations of the blood levels for at least 96 hours. It seems to be justifiable to subject all patients with distant metastases from cancer of the thyroid to removal of the normal thyroid and to prolonged treatment with thiouracil in an attempt to bring them to a treatable stage with radioactive iodine.

Carcinoma of the Thyroid Gland in Youth.—Of 3,328 patients with goiters who were admitted to the hospital of the University of Pennsylvania over a period of 17½ years, 159 had carcinoma of the thyroid. Twenty-two (13.8%) of these 159 patients were less than 25. Of these 22 patients, 19 were observed during the last six years, as well as 43 patients in the same age group with other thyroid lesions (except toxic diffuse goiter) that can be treated surgically. Thus carcinoma of the thyroid gland is not rare in patients less than 25, and its incidence (30.6%) relative to the incidence of other surgical thyroid disease is extremely high as contrasted with that in adults. Of the 22 patients, 17 had cervical lymph node metastases, and 13 initially complained of a lateral cervical mass that ultimately proved to be carcinoma of thyroid origin. This "lateral aberrant thyroid syndrome" presented clinical evidence of metastasis for years before a goiter was apparent. At times careful pathological examination of the thyroid gland may be necessary to disclose the primary tumor. Therefore, all lateral cervical nodes should be removed for pathological examination. The disease should be treated by thyroidectomy (hemithyroidectomy with removal of the isthmus in unilateral cases), neck dissection if there are palpably enlarged cervical lymph nodes, and postoperative roentgen ray therapy. Tracer studies with radioactive iodine should be made when the diagnosis of thyroid carcinoma is suspected. Even extensively invasive tumors should be removed surgically, as completely as possible, together with any remaining normal thyroid gland, to facilitate the subsequent use of radioactive iodine. Two of the authors' patients responded well to treatment with I^{131}, one showing regression of extensive pulmonary metastases. Despite the frequent presence of metastases at the time of the first observation, thyroid cancer in youthful patients appears to be a relatively benign and slowly progressive disease. Even with extensive pulmonary metastasis the prognosis is by no means hopeless.

Journal of Experimental Medicine, New York

94:269-358 (Oct.) 1951

Studies on Host-Virus Interactions in Chick Embryo-Influenza Virus System: IV. Role of Inhibitors of Hemagglutination in Evaluation of Viral Multiplication. O. C. Liu and W. Henle.—p. 269.

Id.: V. Simultaneous Serial Passage of Agents of Influenza A and B in Relation to Variations in Growth Cycle of Influenza B Virus. O. C. Liu and W. Henle.—p. 291.

Id.: VI. Evidence for Multiplicity Reactivation of Inactivated Virus. W. Henle and O. C. Liu.—p. 305.

Persistence in Mice of Certain Foreign Proteins and Azoprotein Tracer-Antigens Derived from Them. P. D. McMaster and H. Kruse.—p. 323.

Similarities in Mechanisms Determining Arthus and Shwartzman Phenomena. C. A. Stetson Jr.—p. 347.

Journal-Lancet, Minneapolis

71:349-412 (Sept.) 1951

Concepts of Bone Grafting. G. M. Hart.—p. 351.

Myxedema: Case Report. W. F. Nuessle.—p. 355.

Recent Developments in Poliomyelitis. K. S. Landauer.—p. 360.

Delayed Healing in Pilonidal Cyst Wounds. B. J. Niemiro.—p. 364.

J. Neuropathology & Exper. Neurology, Baltimore

10:343-458 (Oct.) 1951

Cerebellar Astrocytoma. N. Ringertz and H. Nordenstam.—p. 343.

True Hamartoma of Hypothalamus Associated with Pubertas Praecox. R. B. Richter.—p. 368.

Spinal Teratoma. D. Furtado and V. Marques.—p. 384.

Production of Experimental Encephalomyelitis with Calcium Acetate Compound Extracted from Brain Tissue. A. Ferraro and L. Roizin. —p. 394.

Virus as Primary Plasmacytogenic Agent in Brain Tissue. J. B. Hyde and B. Campbell.—p. 408.

*Heterologous Transplantation of Tumors of Human Nervous System: Implantation in Eye of Guinea Pig. R. M. Kniseley and J. W. Kernohan.—p. 416.

Absence of Regeneration in Spinal Cord of Young Rat. I. Feigin, E. H. Geller and A. Wolf.—p. 420.

Primary Massive Pontine Hemorrhage: Clinico-Pathological Study. A. W. Epstein.—p. 426.

Heterologous Transplantation of Nervous System Tumors.—Many reports of heterologous transplantation of tumors into the anterior chamber of the guinea pig's eye have been enthusiastic, and some investigators believe the technique affords a biologic method for distinguishing benign and malignant neoplasms. Others consider it unreliable. The authors decided to investigate the applicability of the method to gliomatous tumors. They transplanted fragments of 22 tumors of the human nervous system into the eyes of 128 guinea pigs. The transplanted fragments of two of the tumors grew actively; fragments of the remainder of the tumors showed no evidence of growth after 137 to 293 days of observation so that the percentage of "takes" was disappointingly low. The authors feel that the technique may be useful in the research laboratory, but that at present it is not a practical adjunct to the diagnosis of tumors.

Journal of Pediatrics, St. Louis

39:267-396 (Sept.) 1951. Partial Index

*Effect of Cortisone on Nutrition. L. J. Geppert, B. F. O'Hara and A. C. Peat.—p. 267.

Antithrombin Titer in Cystic Fibrosis of Pancreas: Preliminary Report. I. Innerfield, A. Angrist and J. W. Benjamin.—p. 287.

Herpes Simplex Encephalitis. D. R. Ginder and C. M. Whorton.—p. 298.

Infectious Mononucleosis in Negro: Review of Literature with Report of Nine Cases. J. F. Harley.—p. 303.

Electrocardiogram in First Two Months of Life. R. A. Furman and W. R. Halloran.—p. 307.

Use of Ascorbic Acid Tablets to Enrich Milk for Infant Feeding. A. D. Holmes, C. P. Jones and F. Tripp.—p. 320.

Study on Orange Juice, Orange Juice Concentrate, and Orange Peel Oil in Infants and Children: With Special Reference to Incidence of Dermatologic and Gastrointestinal Disturbances. C. L. Joslin and J. E. Bradley.—p. 325.

Effect of Surgery on Growth of Patients with Patent Ductus Arteriosus. F. H. Adams and W. B. Forsyth.—p. 330.

Formula Rooms for Newborn Infants in Lying-in Hospitals: Results of Municipal Educational Program to Modernize Preparation of Formulas; With Special Reference to Terminal Sterilization. H. M. Wallace, H. Abramson, M. A. Losty and others.—p. 337.

*Periarteritis Nodosa in Infancy: Report of Case Following Allergic Reactions to Penicillin. L. Adelson.—p. 346.

Effect of Cortisone on Nutrition.—The relative roles of nitrogen retention and fluid retention in weight gain reported previously in patients treated with cortisone was studied in two boys, aged 4 years, with juvenile rheumatoid arthritis and one boy, aged 11 years, with biliary cirrhosis, pancreatic fibrosis, and bronchiectasis. Four studies of nitrogen, sodium, and potassium balances were carried out during cortisone therapy in these patients. In two of these studies in the patients with rheumatoid arthritis the dietary intake was limited to 1,900 calories per 24 hours. In the other two studies one of the patients with rheumatoid arthritis and the patient with biliary cirrhosis were allowed to consume as much food as desired. From 48 to 72 hours after administration of cortisone was started the children showed a pronounced increase in appetite. If the diet was not restricted their caloric intake was four or five times their basal requirement. Although cortisone is antianabolic, this effect is neutralized by the increased intake of calories, nitrogen, and electrolytes when therapy is continued for 10 days or less. Under such circumstances, approximately half the weight gain is due to nitrogen retention and actual nutritional gain. Excessive weight gain and edema may be reduced by the use of a salt-free diet. If dietary intake is adequate, additional potassium is not required to prevent hypokalemia and potassium deficit, but it may facilitate nitrogen assimilation. Adaptation of these principles and procedures to the treatment of nutritional failure was attempted. Infants who had no specific detectable organic reasons for growth failure were given corticotropin or cortisone for five-day periods. There was no demonstrable effect on the appetite of newborn infants. Several infants between 6 and 12 months of age did show increased appetite and sudden reversal of nutritional failure when corticotropin was given for short periods.

Periarteritis Nodosa in Infancy.—In infants less than 1 year of age periarteritis nodosa is rare. Its occurrence in an infant boy aged four and one-half months was revealed at necropsy. The infant died suddenly 22 days after the onset of what appeared to have been an ordinary upper respiratory infection. During his terminal illness a variety of therapeutic agents were administered, including penicillin by mouth on two occasions in total doses of 600,000 units and 500,000 units, respectively. Each time a skin eruption followed the administration of penicillin within 24 to 48 hours; a discrete, punctate, macular rash appeared on the face, ears, back, and legs after the first course of penicillin, while, after the second, a blotchy and erythematous rash was accompanied by typical urticaria. At gross postmortem examination the heart was found to be enlarged in all diameters and had multiple subendocardial petechiae on the anterior and posterior surfaces. All the major branches of both coronary arteries stood out prominently and had a conspicuously nodular "beaded" appearance. Microscopic examination of multiple sections taken from all portions of the heart disclosed severe necrotizing arteritis and arteriolitis characteristic of periarteritis nodosa. While it cannot be categorically stated that the sensitivity was due to penicillin, the history pointed toward a fairly definite allergic reaction as the major etiological factor. An individual constitutional difference in reactivity determines not only the possibility of sensitizaton but also the character of the reaction and the tissue in which it occurs. Administration of penicillin after symptoms of hypersensitivity have appeared may produce visceral damage of the periarteritis nodosa type and must be discontinued before irreversible changes occur.

J. Pharmacology & Exper. Therap., Baltimore

103:1-106 (Sept.) 1951. Partial Index

Adrenergic Blocking Action of Some Dibenzazepine Derivatives. L. Randall and T. H. Smith.—p. 10.

Effects of Narcotics and Convulsants on Tissue Glycolysis and Respi tion. J. L. Webb and K. A. C. Elliott.—p. 24.

Nicotinolytic Drugs: I. Drugs Inhibiting Nicotine-Induced Tremors. R. Cahen and T. E. Lynes.—p. 44.

Anticonvulsant Activity of α-Phenyl Succinimides. G. Chen, R. Portma C. R. Ensor and A. C. Bratton Jr.—p. 54.

Significance of Carbonyl Group and Ether Oxygen in Reaction of Acet choline with Receptor Substance. J. H. Welsh and R. Taub.—p. 62.

Relative Hypotensive Activity of Certain Veratrum Alkaloids. G. Maison, E. Gotz and J. W. Stutzman.—p. 74.

3-Hydroxy-2-Phenylcinchoninic Acid (HPC): Its Absorption, Excretic and Its Effects on Certain Renal Functions and Enzyme Systems. K. Beyer, H. F. Russo, G. S. Schuchardt and others.—p. 79.

Effect of Cortisone, Desoxycorticosterone, and Adrenocorticotrophic H mone upon Responses of Animals to Analgesic Drugs. C. A. Win and L. Flataker.—p. 93.

Journal of Thoracic Surgery, St. Louis

22:219-328 (Sept.) 1951

Changes in Urine and Serum Electrolytes and Plasma Volumes After Major Intrathoracic Operations. R. K. Finley Jr., J. Y. Templeton III, R. H. Holland and J. H. Gibbon Jr.—p. 219.
Complications and Surgical Treatment of Hiatus Hernia and Short Esophagus. D. B. Effler and C. S. Ballinger.—p. 235.
Formation of Temporary External Esophageal Fistula Over T-Tube for Stenosing Esophagitis. P. Thorek.—p. 248.
Observations as to Etiology and Treatment of Achalasia of Esophagus. E. B. Kay.—p. 254.
*Thoracoplasty Combined with Resection for Pulmonary Tuberculosis. W. S. Conklin, J. E. Tuhy and J. T. Grismer.—p. 271.
Revision Thoracoplasty: Review of 27 Cases. W. O. Kelley and D. V. Pecora.—p. 295.
Liposarcoma of Mediastinum: Report of Case with Associated Lipomas of Mediastinum and Subcutaneous Tissues. C. F. Storey and K. P. Knutson.—p. 300.
Device for Producing Realistic Pulsation of Dead Heart. R. F. Butterworth.—p. 316.
New Operating Cardioscope. R. F. Butterworth.—p. 319.
Primary Lymphoma of Lung: Review of Literature, Report of One Case, and Addition of Eight Other Cases. W. C. Beck and J. C. Reganis.—p. 323.

Thoracoplasty and Resection for Pulmonary Tuberculosis.—Pulmonary resection and thoracoplasty were performed at the same operation on 38 tuberculous patients between 15 and 57. Most of the patients had far-advanced bilateral disease, and about two-thirds had had previous collapse therapy. In 6 of the 38 pneumonectomy was performed, in 29 an upper lobe was removed, and in 12 segmental resection was performed alone or in conjunction with lobectomy. There was one postoperative death among the 32 patients who had upper lobe resections and thoracoplasty and none among the 6 who had pneumonectomy and thoracoplasty. Bronchopleural fistula occurred after the surgical intervention in two patients. One patient had an early postoperative spread in the contralateral upper lobe, which responded promptly to antibiotic therapy; one had temporary atelectasis, and one who had had total pleurectomy and pneumonectomy had recurrent laryngeal nerve palsy on the left. Thus, as a rule, the combined operation seemed to be well tolerated and the incidence of postoperative complications was low. The follow-up period has not been long enough to permit conclusions about the long-term results. Early results were impressive, in that, of the 37 patients who survived, only 1 had positive sputum and this was attributed to preexisting contralateral disease. Thirty-six (95%) had negative sputum and permanent arrest of their disease seemed possible. On the basis of this limited experience with thoracoplasty performed in conjunction with resection and from the reports of others, the authors tentatively listed the following advantages of the combined procedure over separate operations: 1. A modified thoracotomy incision and less extensive rib resection provide adequate exposure and a better functional result than the usual postresection thoracoplasty. 2. The chest wall can be accurately conformed to the remaining portion of the lung before it becomes distended and adherent. Subtotal resection, in preference to pneumonectomy, can be undertaken with more confidence. 3. The pleural dead space is promptly obliterated by thoracoplasty, decreasing the hazard of bronchopleural fistula and emphysema. 4. Elimination of one major procedure and its attendant risk is important to the patient and to the hospital, and patients who have had a resection and might refuse a second operation are assured the protection of thoracoplasty.

New England Journal of Medicine, Boston

245:441-474 (Sept. 20) 1951

*Pulmonary Complications of Cardiospasm. A. S. Breakey, C. T. Dotter and I. Steinberg.—p. 441.
Carcinoma of Ovary: Clinical and Pathological Evaluation. F. C. Wheelock, R. H. Fennell Jr. and J. V. Meigs.—p. 447.
*Incidence of Hypertension in Mitral Stenosis. M. D. Roseman and E. Wasserman.—p. 450.
Premenstrual Tension: Its Relation to Abnormal Water Storage. W. Bickers and M. Woods.—p. 453.
Blood Grouping, Blood Banking and Blood Transfusion (Concluded). L. Soutter, F. H. Allen Jr. and C. P. Emerson Jr.—p. 456.

Pulmonary Complications of Cardiospasm.—Cardiospasm complicated by pulmonary disease was studied in 63 patients, 17 of whom are reported on for the first time. Of the 63 patients, 27 were men, 35 were women, and the sex of 1 was unknown. The average age of the patients at the time of the diagnosis was 40.5 years. It is significant that 25 patients, i. e., more than one-third, complained initially of symptoms referable to the pulmonary complications of cardiospasm (cough, hemoptysis, fever, and chest pain) rather than of symptoms directly due to the esophageal disease. Thirty-eight patients complained initially of dysphagia, regurgitation, and vomiting, and 11 of these noted the simultaneous onset of symptoms caused by the cardiospasm and its pulmonary complications. Of the 63 patients, 8 died after protracted chronic illness and 1 died suddenly after massive aspiration of esophageal contents; necropsy revealed mega-esophagus in all of them. From available clinical, laboratory, and roentgenologic data it appears that most of the pulmonary complications of cardiospasm resulted from repeated aspiration of material from the dilated food-filled esophagus, especially at night, causing pneumonia, lung abscess, or even sudden asphyxia. These lesions will not respond permanently to therapy unless the fundamental lesion, the cardiospasm itself, is eliminated. Cardiospasm can be treated. Early diagnosis and definite therapy are desirable. The esophagus should always be examined when pneumonia, nonspecific pulmonary infiltration, lung abscess, or pulmonary lesions of obscure etiology occur.

Hypertension in Mitral Stenosis.—The association of hypertension and mitral stenosis was investigated in 517 patients with mitral stenosis, 185 males and 332 females of all age groups. Controls were 2,000 hospital patients of comparable age and sex distribution. Of the 517 patients, 103 (19.9%) had hypertension; of the controls, 581 (29.1%) had hypertension. Of the 223 patients over 45 with mitral stenosis, elevated blood pressure was found in 71 (31.9%), and 43.4% of the controls in this age group had high blood pressure. Seventy (21.1%) of the 332 females had hypertension; 29.9% of 1,004 female controls had hypertension. Fifty-four (39.7%) women over 45 had elevated blood pressure, as compared with 50.5% of the controls. Of 185 male patients of all ages, 33 (17.8%) had hypertension, while 28.2% of the male control group had hypertension. Seventeen (19.5%) of 87 men over 45 had elevated blood pressure, compared with 37.5% of the controls. In general, these results corroborate those of Horns. The incidence of hypertension in patients with mitral stenosis, in all age groups and of both sexes, appears to be no greater than that of the general hospital population. This contradicts the general belief that hypertension is commoner in patients with mitral stenosis in the older age group, particularly in women.

New Orleans Medical and Surgical Journal

104:131-172 (Oct.) 1951

P-92 *Penicillin*: New Penicillin Salt with Decrease in Reaction Rate. A. B. Longacre.—p. 131.
Tuberculosis Treated with Antibiotics. C. R. Gowen and E. C. Edwards.—p. 136.
Intravenous Administration of Dilute Pitocin in Obstetrics: Experience in 173 Cases. G. T. Schneider, J. H. Ferguson and H. K. Miller.—p. 139.
*Mercurial Diuretics in Toxemia of Pregnancy: Preliminary Report. R. C. Smith, H. K. Miller and J. W. Hendrick.—p. 144.
Free Feeding in Obstetrics. M. M. Miller.—p. 149.
Accidental Hemorrhage in Third Trimester of Pregnancy. M. A. Schudmak.—p. 154.
The Headache Problem. B. P. Smith.—p. 157.
Problem of the Dizzy Patient. M. L. Lewis Jr.—p. 161.

Mercurial Diuretics in Toxemia of Pregnancy.—Since the prognosis in severe preeclampsia and eclampsia is better for patients who have a good urinary output, Smith and associates decided to use the mercurial diuretic, mersalyl, to control edema. Patients with sudden, excessive weight gain with pitting edema of the lower extremities were thought to need diuretic treatment. The authors hospitalize all patients with toxemia whose condition does not seem controllable in the outpatient clinics, including many who do not cooperate on a salt-poor diet. The laboratory examinations include daily urine albumin determinations, electrocardiograms, and blood chemistry and kidney function tests. Patients are on complete bed rest during this time. After this work-up is completed and a base line is reached, the patients are given 2 cc. of mersalyl, usually by intramuscular injection. Of the 41 patients with toxemia of pregnancy who were treated with mercurial diuretic, 29 received mersalyl on one or two occasions along with bed rest, a salt-free diet, and sedation. Twelve patients also received hypertonic glucose solution and ammonium chloride. The average weight loss in the former group was 7.1 lb. (3.2 kg.), while in the latter group it was 8.3 lb. (3.8 kg.). No toxic reactions occurred. On two occasions amniotic fluid obtained 24 hours following administration of mersalyl contained no mercury. The authors feel that no definite conclusions can be based on this study, but the results justify further use of mercurial diuretics in toxemia of pregnancy.

New York State Journal of Medicine, New York

51:2055-2182 (Sept. 15) 1951

Problem of Gastric Cancer. A. F. R. Andresen.—p. 2115.
Primary Cancer of Liver. R. R. Heffner and R. C. Swingle.—p. 2123.
Present Trends in Treatment of Ulcerative Colitis. B. B. Crohn and H. Yarnis.—p. 2129.
Surgery in Ulcerative Colitis. H. A. Patterson.—p. 2135.
Silent Carcinoma of Cecum. S. J. Stabins and J. A. Dixon.—p. 2140.
Place of Banthine in Treatment of Duodenal Ulcer. H. L. Segal, H. A. Friedman and J. S. Watson Jr.—p. 2147.
Postdysenteric Syndrome. S. M. Fierst and A. Werner.—p. 2152.
Clinical Value of Duodenal Drainage in Diagnosis of Carcinoma of Biliary Tract and Pancreas. H. M. Lemon.—p. 2155.
Evaluation of Teropterin Therapy in Metastatic Neoplasms. S. Weintraub, I. Arons, L. T. Wright and others.—p. 2159.

Ohio State Medical Journal, Columbus

47:897-980 (Oct.) 1951

Medical Supervision of Boxing. L. B. Chenoweth.—p. 913.
Acute Nonspecific Pericarditis: Report of Case Treated with ACTH (Adrenocorticotrophic Hormone). N. J. Kursban and A. Iglauer. —p. 915.
A Case with Unusually High Cold Hemagglutinin Titer. F. Shaft and R. I. Fried.—p. 919.
Case Report: Remission in Chronic Schizophrenic Illness After Treatment with Cortisone. J. B. Cohn and D. Harris.—p. 922.
Anatomical Distribution of Pancreatic Fat Necrosis: Report of Case with Unusual Dissemination. R. S. Wilson.—p. 925.
Carcinoma of Gallbladder—Analysis of Cases. F. N. Suma and R. D. Williams.—p. 927.
Manipulation of Lumbosacral Joint. E. H. Schweitzer.—p. 930.

c. Staff Meet. Mayo Clinic, Rochester, Minn.

26:361-376 (Sept. 26) 1951

Clinical Effects of Cortisone Administered Orally to Patients with Rheumatoid Arthritis. L. E. Ward, C. H. Slocumb, H. F. Polley and others. —p. 361.
Interrelationships Between Enzymes and Hormones: VI. Influence of Age, Sex, Adrenalectomy, and Cortisone Acetate upon Concentration of Monamine Oxidase in Livers of White Rats. J. S. Schweppe, A. E. Zeller and G. M. Higgins.—p. 371.

Oral Administration of Cortisone in Rheumatoid Arthritis.—The oral administration of cortisone either in the form of tablets or in a saline suspension produced an effective antirheumatic response in 99 of 100 patients studied. Equally good results were obtained with the tablets and the suspension. Of the 100 patients, 27 were given cortisone, first intramuscularly and then orally, 72 were given cortisone only by mouth, and one was given cortisone first by mouth and then, when no antirheumatic effect was obtained, by intramuscular injection. The required oral dose of cortisone was approximately the same or only sligthly larger (a sixth to a fourth) than the intramuscular dose in most cases. Because of the prompt but short action of cortisone given orally, the daily dose was given in three or four parts at appropriate intervals. Results of this study emphasize the importance of regulating the dosage to meet each patient's need. Similar side-effects resulted from oral and intramuscular administration of cortisone. In only two patients did gastrointestinal irritation follow oral administration of tablets of cortisone. Use of cortisone was discontinued in 11 cases to see how much improvement would be maintained. Relapses began to occur within 10 to 60 hours after withdrawal of cortisone in 9 of these 11 cases. Remissions in the other two cases are now of 2 months' and 10 months' duration, respectively. The oral administration of cortisone in doses just small enough to prevent development of significant side-effects appears to be useful for long-term management in many cases of rheumatoid arthritis.

South Carolina Medical Assn. Journal, Florence

47:317-358 (Sept.) 1951

Present Concepts Concerning Etiology and Therapy of Urinary Lithiasis. L. F. Greene.—p. 317.
Present Status of Thyroid Surgery and Indications for It. W. H. Prioleau.—p. 321.
Serum Neuritis Following Use of Rabbit Serum. J. I. Waring.—p. 323.
Athletic Injuries. W. Cook.—p. 324.
Carcinoma of Stomach: Clinical Study. H. W. Mayo Jr.—p. 326.

47:359-392 (Oct.) 1951

Importance of Symptomless Intrathoracic Lesions. P. W. Sanger.—p. 359.
*Reading Difficulty in Children. J. W. Jervey.—p. 363.
Cavernous Hemangioma: Report of Unusual Case. L. B. Keels and W. M. Lemmon.—p. 365.
Carcinoma of Colon and Rectum: Clinical Study. R. B. Leonard and H. W. Mayo Jr.—p. 368.

Reading Difficulty.—Of 2,000,000 new pupils each year in the United States, nearly 300,000 fail for lack of reading skill. More boys than girls have difficulty and it may occur in pupils with a high intelligence quotient. Three times as many cases of dyslexia have resulted when flash methods of teaching have been used alone as when phonetic instruction has been employed. The more rapid techniques are excellent for most children, but some must learn by more dependable means. It has been shown that beginners do better when they can name and write capital and small letters. Too much emphasis on speed may create a subconscious sense of defeat and conflict, and can produce inability to read. The most experienced, most intelligent, and highest paid teachers should teach in the primary grades, rather than those with least experience, as is now the practice. Emotional problems may be a factor in dyslexia, but many problem children have improved in behavior when reading difficulty has been cured. Dyslexia appears to be commoner in persons with mixed cerebral dominance, that is, in persons who are lefthanded with a dominant right eye or vice versa. In these cases confusion can be demonstrated clinically. The ophthalmologist is consulted because it is assumed that eye disturbances are factors in dyslexia, but phorias occur with equal frequency in good and poor readers. There is a possible relation between dyslexia and a low amplitude of fusion or a weak power of convergence. The author states that all children cannot be taught by so-called "progressive methods." When difficulty is incipient or well established, teaching must begin with the most elementary work regardless of the school grade, including fundamentals of syllable formation, word structure and analysis, phonetics, and spelling. Kinesthetic methods such as tracing, sand writing, and typing are of value.

Surgery, St. Louis

30:597-762 (Oct.) 1951

*Partial Gastrectomy for Ulcer and Postoperative Complications. K. Nicolaysen and B. Fretheim.—p. 597.
*Diverticulitis of Colon and Its Surgical Management. J. W. Neal Jr. —p. 606.
Bacteriologic Study of Human Liver. C. Romieu and A. Brunschwig. —p. 621.
Effects of Ligation of Hepatic Artery in Dogs. D. Fraser, A. M. Rappaport, C. A. Vuylsteke and A. R. Colwell Jr.—p. 624.
Partial Hepatectomy in the Dog: Experimental Study. M. S. DeWeese and C. Lewis Jr.—p. 642.
Aureomycin in Experimental Acute Pancreatitis of Dogs. L. Persky, F. B. Schweinburg, S. Jacob and J. Fine.—p. 652.
Carcinoid Tumors of Appendix: Review of 26 Cases. G. N. Weiss and A. J. Hertzog.—p. 657.
Lateral Supratentorial Approach to Cerebellopontine Angle for Acoustic Nerve Tumor: Preliminary Report. A. Ecker.—p. 661.
Mulitiple Rib Fractures: Indication for Tracheotomy. M. H. Williams. —p. 664.
Mixed Tumors of Skin: Criteria for Diagnosis. L. G. Khedroo and P. A. Casella.—p. 674.
Experimental Intracardiac Surgery with Extracorporeal Circulation. W. T. Mustard and A. L. Chute.—p. 684.
Atrophy of Sarcoma in Rats Followed by Tumor Immunity: Surgical Method for Development of Tumor Immunity in Rats. M. R. Lewis, D. B. Maxwell and P. M. Aptekman.—p. 689.

Partial Gastrectomy for Ulcer.—This is a study of 280 patients with gastroduodenal ulcer in whom partial gastrectomy was performed between 1946 and 1949, including 65 patients with gastric ulcer, 8 with ulcer of the stomach and duodenum, and 207 with duodenal ulcer. Not included were those operated on for perforating ulcer, those with bleeding ulcers operated upon as an emergency measure, those with marginal ulcer, 11 cases in which only gastrojejunostomy was performed, and 2 cases in which only vagus resection was done. The criteria for the operative treatment were drawn up in cooperation with the medical department where follow-up examinations were made on the patients treated medically. It was found that 22% of patients with gastric ulcer and only 10% of patients with duodenal ulcer had not had recurrence. The rate of cure after medical treatment was much poorer for patients with ulcer symptoms of more than five years' duration than for those with symptoms of less than five years' duration. Of the former, 14% with gastric ulcer and 7.6% with duodenal ulcer did not have recurrence. Therefore the authors recommend surgical treatment for all patients with ulcer symptoms of more than five years' duration and for some patients with ulcer symptoms of less than five years' duration. The authors discuss the surgical technique with particular attention to postoperative complications. The mortality rate was 0.35%, and postoperative complications occurred in 30%. The most important complications were postoperative hemorrhage, gastric retention, rupture of the incision, and respiratory infections. The marked improvement in results in recent years is due not only to more effective treatment of infections (with sulfonamides and penicillin), but probably primarily to general measures used in preoperative and postoperative treatment. The improvement also results from use of partial gastrectomy rather than exclusion by Finsterer's method in cases of duodenal ulcer difficult to remove.

Colon Diverticulitis.—Neal reviews the literature and gives his own observations on diverticulitis of the colon. The etiology is unknown, but the most plausible explanation is an inherent weakness of the muscular walls and increased intracolonic pressure. Various symptoms are produced by diverticulitis, depending on the location in the colon and the degree and extent of the inflammatory process. Diagnosis of diverticulitis depends on demonstration of the diverticula on roentgenograms. At times preoperative diagnosis is impossible, especially with cecal involvement. The author discusses six surgically treated patients, including one with solitary cecal diverticulitis. As a rule, surgical treatment should be reserved for the complications of diverticulitis, including acute perforation, abscess, obstruction, fistula formation, coexisting carcinoma, and inability to differentiate diverticulitis and carcinoma. It has been estimated that complications requiring surgery occur in from 15 to 20% of cases. Bowel resection should not be undertaken in the presence of an active inflammatory process. When there is complete obstruction or fistula formation, a colostomy should be performed, preferably in the transverse colon proximal to the lesion. After an optimum waiting period of one year, the opening may be closed or the involved segment resected, depending on the condition of the bowel. When carcinoma cannot be ruled out, radical resection is indicated.

U. S. Armed Forces Med. J., Washington, D. C.

2:1269-1422 (Sept.) 1951. Partial Index

Field Use of Methadone and Levo-Iso-Methadone in Combat Zone (Hamhung-Hungnam, North Korea). H. K. Beecher, P. A. Deffer, F. E. Fink and D. B. Sullivan.—p. 1269.
Thoracic Injuries in World War II: II. Therapy in Reconstructive Phase. J. P. O'Connor.—p. 1277.
Saline Solution in Treatment of Injuries with Shock. D. W. Richards Jr. —p. 1289.
Effect of Rapid and Prolonged Rewarming on Local Cold Injury. J. Pichotka and R. B. Lewis.—p. 1293.
Epidemic Typhus Vaccine: Antibody Response to Single Dose Among Persons Previously Vaccinated. R. L. Gauld and K. Goodner.—p. 1311.
Medical Problems of Underwater Demolition Team. C. L. Waite. —p. 1317.
Needle Biopsy of Liver. O. A. Wurl and J. H. Moyer.—p. 1327.
*Narcotic Addiction: Management of Withdrawal Symptoms with Cortisone. W. H. Boswell.—p. 1347.
Treatment of Malignancy of Testes. J. C. Kimbrough and W. H. Morse. —p. 1353.
Histamine as Factor in Dental Inflammation. M. W. Ogle and R. B. Lydic.—p. 1357.
Management of Abortion. W. S. Baker Jr.—p. 1363.
Betel Nut Chewer's Cancer. R. W. Mendelson.—p. 1371.
Foreign Bodies in Lip. J. P. Echternach.—p. 1377.
Volunteer Blood Donor Program. J. A. Mikuluk.—p. 1379.
Coarctation of Aorta. J. H. Forsee, H. W. Swan II, E. M. Goyette and H. P. Makel.—p. 1385.

Cortisone for Withdrawal Symptoms in Narcotic Addiction.—The case reported was a 27-year-old medical officer with five months' service in Korea. He admitted taking an average of 60 cc. of meperidine (demerol®) hydrochloride and 1 gm. of morphine daily. This was self-administered intravenously, usually 6 times daily with ten 16 mg. morphine tablets dissolved in 10 cc. of meperidine solution. Within 24 hours after admission moderate gastric cramps developed and the patient vomited. Within the next two hours abdominal pain increased, and several fluid bowel movements occurred. The patient began to be apprehensive, weak, and broke out in a cold sweat. The pulse rate increased, and the blood pressure fell. To establish a definite diagnosis, 10 cc. of meperidine solution was given intravenously following which there was complete relief of symptoms. Then the patient slept for five hours. During the next 12 hours he was given two further injections of meperidine solution, and, at 11 a. m. on Feb. 19, that is, 18 hours after the onset of symptoms, oral administration of cortisone acetate was started. The patient was given (1) 100 mg. of cortisone and 0.5 mg. of potassium chloride every six hours for four doses; (2) 50 mg. of cortisone and 0.5 mg. of potassium chloride every six hours for three days; and (3) 25 mg. of cortisone and 0.5 mg. of potassium chloride every six hours for one day. About one hour after the first dose of cortisone was given there was evidence of early shock and 16 mg. of morphine was given hypodermically. Again at 3 p. m. shock was imminent, and the morphine injection was repeated. By 10 p. m. the general condition had improved. The patient was able to take food and fluid. By noon on Feb. 20 he was completely asymptomatic. His appetite increased, and on the third, fourth, and fifth days of treatment he ate an average of four rations at each of the regular meals, extra milk between meals, and a midnight ration. During these three days he consumed 36 bars of candy, and his fluid intake was greatly increased. He was mildly euphoric. Although physically tired, he was mentally alert. For the entire period of treatment and for two days following he was unable to sleep. The night after treatment was terminated, he slept for two hours; this amount increased several hours a night until by the fifth night after treatment was terminated he was sleeping seven or eight hours nightly. During the 10 days of post-treatment observation there was no mental depression or malaise and his appetite remained good. During the 15 days of hospitalization he gained 15 lb. (6.8 kg.). Two weeks later, he had continued to gain weight and his mental outlook was improved.

Virginia Medical Monthly, Richmond

78:525-580 (Oct.) 1951

Chronic Lung Failure. J. L. Guerrant.—p. 527.
Evaluation of the Cardiac Patient. A. D. Williams.—p. 535.
Evaluation of Certain New Therapeutic Measures in Management of Rheumatoid Arthritis. W. L. Wingfield, E. C. Toone Jr., J. P. Williams and E. Becker.—p. 539.
Urological Problems in Infants and Children. P. Hogg, C. W. Beaven and A. A. Creecy.—p. 546.
Spinal Fusion in Treatment of Low Back Pain—Some Clinical Observations. R. D. Butterworth.—p. 551.
Pulmonary Tuberculosis and the Doctor in Practice. C. LaFratta. —p. 554.

Wisconsin Medical Journal, Madison

50:840-972 (Sept.) 1951

Clinical Study of Anticoagulant Properties of Treburon. J. S. Hirschboeck, F. W. Madison, J. J. Gilliberti and A. V. Pisciotta.—p. 863.
Unusual Aortic Arch Nonluetic Aneurysm: Surgical Treatment. W. Weisel, W. A. Huttner and I. H. Becker.—p. 866.
Infectious Mononucleosis: Symptomatology and Complications. L. P. Wolf and J. D. Fine.—p. 869.
Treatment of Certain Allergic Syndromes with Parenteral Diphenhydramine Hydrochloride (Benadryl). W. H. Lipman.—p. 873.
Cataract Surgery in Pakistan. J. K. Trumbo.—p. 877.

50:973-1064 (Oct.) 1951

New Psychiatric Concepts and Their Application. L. A. Osborn.—p. 994.
Association of Varicose Veins with Industry. H. O. McPheeters.—p. 997.
Juvenile Cirrhosis of Liver in Three Members of the Same Family. J. A. Schindler and L. G. Kindschi.—p. 1004.
Prophylactic Appendectomy During Cholecystectomy: Review of 247 Cases. T. Taniguchi and F. A. Stratton.—p. 1009.

FOREIGN

Acta Endocrinologica Iberica, Porto

1:145-208 (May-June) 1951. **Partial Index**

*Epinephrine Eosinopenia in Various Diseases. E. A. Laviada.—p. 145.

Epinephrine Eosinopenia.—Twenty-five patients with different diseases were tested for eosinopenia following epinephrine administration. The decrease of circulating eosinophils was small in three patients with pluriglandular disease of hypophysial origin. A contrary reaction, with a 60% increase in eosinophils, occurred in an acromegalic patient. The eosinopenic index was lower than 50% in six patients with Addison's disease, in two of whom the disease was clinically compensated. It was above 70% in two of four patients with rheumatoid arthritis and below 50% in the other two. There was no relation between the results of the test and the acuteness of arthritis. In 10 patients with cardiovascular or bronchopulmonary diseases or infections, the test results depended on the general health of the patient. The average decrease in eosinophils was 56% in patients in good health and 35% in those in poor health. The test is of value in the differentiation of Simmonds' cachexia and anorexia nervosa and of prognostic value in acute and chronic infections.

Archives of Disease in Childhood, London

26:279-362 (Aug.) 1951. **Partial Index**

Osteochondrodystrophia Deformans (Morquio Brailsford Disease). N. Feldman and M. E. Davenport.—p. 279.
Congenital Myasthenia Gravis. R. I. Mackay.—p. 289.
Functional Intestinal Obstruction in the Newborn. I. Forshall, P. P. Rickham and D. B. Mossman.—p. 294.
Congenital Mitral Stenosis. J. L. Emery and R. S. Illingworth.—p. 304.
Sarcoma of Heart in a Child. E. G. G. Roberts and R. M. E. Seal. —p. 308.
Q-T Interval in Rheumatic Fever. J. N. Briggs and S. A. Doxiadis. —p. 311.
Serial Electrocardiograms in Rheumatic Fever. B. Gans.—p. 315.
Electrical Conductivity and Chloride Content of Women's Milk. W. O. Kermack and R. A. Miller.—p. 320.
Phaeochromocytomata in Children. D. Hubble.—p. 340.
Familial Renal Insufficiency. N. S. Clark.—p. 351.
Unilateral Renal Vein Thrombosis Treated by Nephrectomy and Post-Operative Heparin. E. W. Parry.—p. 358.

chives des Maladies du Coeur, Paris

44:673-768 (Aug.) 1951. **Partial Index**

Results of Surgical Treatment of Coronaritis. M. Fauteux.—p. 673.
*Involvement of Tricuspid Valve in Course of Mitral Stenosis. P. Soulié, Y. Bouvrain and J. Di Matteo.—p. 687.
Auriculo-Ventricular Synchronization and Syndrome of Wolff-Parkinson-White. M. Segers.—p. 712.
Paroxysmal Tachycardia and Allergic Factors. M. Vastesaeger, J. F. Merlen and A. E. Hustin.—p. 721.
*Procaine Amide in Treatment of Paroxysmal Ventricular Tachycardia and Other Cardiac Arrhythmias. F. Siguier, J. J. Welti, Guedeney and Sebaoun.—p. 736.

Involvement of Tricuspid Valve in Mitral Stenosis.—In patients with mitral stenosis the tricuspid valve is often involved simultaneously. However, since tricuspid valve lesions seldom produce murmurs, the clinical diagnosis is difficult. The authors found this involvement at autopsy in 26 of 70 patients with mitral stenosis. The tricuspid valve showed manifest stenosis in seven patients, diffuse valvulitis without stenosis in three, discrete lesions of the valve leaflets in six, lesions of the chordae tendinae without lesions of the valves in four, and dilatation of the orifice without lesions of the valves in six. A diagnosis of functional tricuspid insufficiency was made in the last six cases. The most valuable diagnostic sign of tricuspid insufficiency is an enlarged liver that pulsates synchronously with ventricular systole. This can be demonstrated by electrokymography, kinedensography, and roentgen-electrokymography. These methods also permit demonstration of right auricular systolic regurgitation. Other clinical manifestations to be noted are the contrast between the clearness of the pulmonary fields on roentgenologic examination and the enlarged heart, enlarged liver, and peripheral edema. The differentiation of organic and functional tricuspid involvement is difficult. The diagnosis of tricuspid stenosis is suggested by the relatively rare occurrence of paroxysmal pulmonary edema and by the predominance of hepatic involvement, including the enlarged and pulsating liver.

Procaine Amide in Ventricular Tachycardia.—Procaine ami seems at present the best treatment of paroxysmal ventric tachycardia. Slow intravenous injection of this drug usu makes possible the arrest of a prolonged crisis, without pr voking serious complications. Oral administration makes it pos sible to avoid new crises and to terminate recurrent paroxysm Although procaine amide is effective in the prevention and trea ment of ventricular extrasystoles, it is less effective in auricul or nodal hyperexcitability.

Arch. Urug. Med., Cir. y. Espec., Montevideo

38:229-350 (April) 1951. **Partial Index**

*Syringe-Transmitted Virus Hepatitis in Uruguay: Prevention. B. Var Fuentes, C. Gómez del Valle and G. Martínez Prado.—p. 229.

Virus Hepatitis by Inoculation.—Sixty-six cases of syring transmitted virus hepatitis are reported. The disease was acu in eight cases, and two patients died. The frequency of syring transmitted hepatitis in Uruguay necessitates establishment o efficient preventive measures. Both the A and the B viruses su vive boiling for 15 minutes; they survive for a few months i certain antiseptics and for many years in dried plasma. Boilin needles and syringes after they have been used on carriers o A or B virus or patients with asymptomatic and nonicteric form of hepatitis does not protect the subsequent user against syring transmitted hepatitis. To prevent transmission of the virus th following measures are advisable: 1. Private patients shou have their own syringes and needles, which in these cases ca be boiled for sterilization. 2. In hospitals, clinics, sanatorium and laboratories for clinical analyses, "pyrex" syringes shou be used. They should be dried and held over a Bunsen micr burner so that the flame enters the syringe and touches all su faces. 3. Platinum needles or needles of an inexpensive materi that can stand direct exposure to a flame for sterilization shou be used. The following measure should be observed in tran fusion departments and routinely in blood banks: 1. Blo serum and plasma should be subjected to ultraviolet irradiati at 2,650 A. units for one hour. 2. Persons with a proved doubtful clinical history of jaundice should be rejected as dono 3. Apparently acceptable donors should have a urine examin tion for bilirubin and urobilin. If the urine is normal, a blo sample should be studied for direct bilirubinemia, and cephali cholesterol flocculation and thymol turbidity tests should made. Positive results of these tests suggest that the person in the preclinical phase of hepatitis or in the incubation peri of a virus infection, and should be rejected as a donor.

British Journal of Radiology, London

24:469-524 (Sept.) 1951. **Partial Index**

SYMPOSIUM ON THE RETICULOSES

Comments on Pathology of Reticuloses. W. St. C. Symmers.—p. 469.
Clinical Aspects of Reticuloses. R. B. Scott.—p. 475.
Radiological Diagnosis of Reticuloses. F. C. Golding.—p. 478.
Treatment of Reticulosis by X-Rays. W. M. Levitt.—p. 485.
Cutaneous Manifestations of Reticuloses. B. Russell.—p. 498.
Nitrogen Mustard Therapy in Reticuloses. J. D. N. Nabarro.—p. 507.

British Medical Journal, London

2:747-806 (Sept. 29) 1951

Practical Aspects of Radioactive Isotopes in Relation to Medical Tr ment. J. S. Mitchell.—p. 747.
Theoretical Aspects of Isotopes in Relation to Medicine. A. Worm —p. 757.
Some Observations on Endogenous Cortisone Excretion in Man. C. Cope, X. Boysen and S. McCrae.—p. 762.
Trials of Oral Streptomycin for Infants with Non-Specific Gastroenter I. Trial at the City Hospital, Edinburgh. G. M. Lowdon and M. McNeill.—p. 767.
Id.: II. Trials at the Queen Elizabeth Hospital, Hackney. W. F. Yo G. Smith, A. Russell and B. McNicholl.—p. 770.
Chemical Tests for Blood in Urine. H. Caplan and G. Discombe.—p.
Glandular Fever with Neurological Complications. J. S. Crow —p. 775.
*Tenosynovitis of Wrist. M. Ellis.—p. 777.

Tenosynovitis of Wrist.—Examination of 44 cases of tenosy vitis of the wrist convinced Ellis that the anatomic descript given in most textbooks is in error. He found that a sausa shaped swelling was present on the radial side of the lower of the dorsal surface of the forearm but never extended distally more than about 2 in. (5 cm.) from the lower articular margin of the radius. Thus, even allowing for a tendon sheath extending around the muscle bellies, the swelling seemed to be too high in the forearm to have any connection with the extensors and long abductor of the thumb. Dissections convinced Ellis that tenosynovitis is a lesion of the sheath of the tendons of the extensor carpi radialis muscles rather than a lesion of the muscles of the thumb. The disease is said to be due to a strain or excessive use of muscles. The tenosynovitis in the reported cases resulted from direct trauma by a blow on the tendon sheath in 13 of the cases, from indirect trauma associated with isolated excessive muscular action in 9 cases, and unaccustomed movements of the wrist in 19 cases; no definite cause could be ascertained in 3 cases. The patient usually complains of pain at the back of the wrist or lower forearm and sometimes of weakness of the grip. The sausage-shaped swelling may be hot and tender to the touch, particularly when the tenosynovitis follows sudden trauma, and crepitus is always noted with movements of the wrist. Treatment in the form of immobilization by splints, electrotherapy, and counterirritants is discussed. At the author's clinic it is explained to the patient that to stop work and immobilize the wrist in plaster-of-paris will give speedy relief from pain, but when the plaster is removed and the wrist is used again, the pain may recur. The patient is urged to continue work and to rub iodine ointment into the swelling twice daily. The pain will then slowly disappear and will not recur.

Journal of Hygiene, London

*49:127-364 (June & Sept.) 1951. **Partial Index***

Spread of Infantile Gastro-Enteritis in a Cubicled Ward. K. B. Rogers.—p. 140.
Observations on Life Cycle of Nocardia. E. O. Morris.—p. 175.
Comparative Study of Reaction in Vivo and in Vitro of Rabbit Tissues to Infection with Bovine Tubercle Bacilli: Part I. Observations on Rabbit Spleen Infected in Vitro. H. B. Fell and E. M. Brieger.—p. 181.
*Diphtheria in the Immunized with Observations on Diphtheria-Like Disease Associated with Non-Toxigenic Strains of Corynebacterium Diphtheriae. D. G. Edward and V. D. Allison.—p. 205.
Survival of Bacteria During and After Drying. R. M. Fry and R. I. N. Greaves.—p. 220.
Surviving Tissue Suspensions for Influenza Virus Titration. F. Fulton and P. Armitage.—p. 247.
Penicillin Sensitivity and Phage Types of Staphylococci Isolated from Hospital Patients. J. S. Elwood.—p. 263.
*Preparation, Testing and Standardization of Typhoid Vaccine. A. Felix.—p. 268.
*Immunizing Potency of Alcohol-Killed and Alcohol-Preserved Typhoid Vaccine After Storage for Ten Years. A. Felix and E. S. Anderson.—p. 288.
Double Enteric Infection (La Fièvre Typhoïde Intriquée): Account of Epidemic. A. B. Shaw and H. A. F. Mackay.—p. 299.
Hospital Outbreak of Typhoid Fever. W. H. Bradley, L. W. Evans and I. Taylor.—p. 324.
Hospital Outbreak of Typhoid Fever: Bacteriological and Serological Investigations. A. C. Jones.—p. 335.

Diphtheria in the Immunized.—A series of 35 patients with diphtheria who had been fully inoculated against the disease and from whom toxigenic diphtheria bacilli were isolated were investigated and compared with 17 patients who had not been inoculated. Two-thirds of the infections in the inoculated were due to Corynebacterium diphtheriae, intermediate type. Intermediate infections were proportionately more numerous in the inoculated than in the uninoculated, whereas gravis infections were less frequent. Estimations of the antitoxin in the blood were made on admission. The inoculated patients had levels of antitoxin below, or in the neighborhood of, that believed to confer protection. In the inoculated group severity did not appear to be influenced by the level of antitoxin in the blood on admission. Antitoxin in the blood was found to have increased after recovery in all except one patient; the increase was great in those who had been inoculated previously. From 23.5% of all cases of clinical diphtheria investigated only nontoxigenic diphtheria bacilli (gravis, intermedius, and mitis types) were isolated. These cases were considered separately. On admission the majority of the patients had in their blood considerable amounts of antitoxin, which did not increase after recovery. No other pathogenic organisms were regularly found. It is possible that under certain conditions nontoxigenic C. diphtheriae may be able to cause a diphtheria-like disease.

Typhoid Vaccine.—The review of the laboratory evidence published since the introduction, 10 years ago, of the alcohol-treated typhoid vaccine furnishes additional support for abandoning the old method of making typhoid vaccine. The alcohol-treated vaccine has advantages in regard to both the Vi-antibody response and the degree of systemic reactions produced. Felix stresses the necessity of testing typhoid vaccines not only by active-immunity tests in mice but also for their antibody-stimulating properties. These tests consist of immunization of rabbits, estimation of their Vi-agglutinin and O-agglutinin titers, and passive-immunity tests in mice. The author lists the important sources of error in mouse-protection tests and shows how they can be avoided. Standardization of the potency of typhoid vaccine is now possible. Either an alcohol-preserved or a dried vaccine can serve as standard vaccine, to be used in combination with the "provisional standard antityphoid serum." The paratyphoid components of T. A. B. C. (typhoid-paratyphoid A, B, and C) vaccine can be standardized in an analagous manner.

Potency of Typhoid Vaccine After Storage.—Alcohol-killed and alcohol-preserved typhoid vaccine retain their power of stimulating Vi-antibody and O-antibody formation unimpaired during storage at 1 to 2 C for at least 10 years. The Vi antibody induced by immunization with the 10-year-old vaccine possesses full functional efficacy in passive-immunity tests in mice. The expiration date of this type of vaccine can be extended to a period of 10 years, provided the vaccine is kept in cold storage.

Journal of Laryngology and Otology, London

65:549-628 (Aug.) 1951

Osteoclastoma in Relation to Nose. A. B. Handousa.—p. 549.
Nasal Malignant Melanoma. T. S. Stewart.—p. 560.
Self-Limited Osteomyelitis of Skull and Paranasal Sinuses. H. Brunner.—p. 575.
*Allergic Rhinitis at Menopause. H. A. Lucas and J. Pepys.—p. 598.

Allergic Rhinitis at Menopause.—Fifty-seven patients with allergic rhinitis were treated with synthetic estrogens. Thirty-three patients responded well to treatment with estrogens alone, although in six cases a clinical history of sensitivity to inhalant allergens was confirmed by positive skin tests. Six patients required both estrogen and desensitization with inhalant allergens. In 30 of these 39 patients, there was a relationship between the rhinitis and the menopause. In 18 patients with a history suggesting a relationship between the rhinitis and the menopause the rhinitis was not improved by estrogen treatment, and 9 patients were benefited by desensitization with inhalant allergens. The response to estrogen treatment was rapid, and, when symptoms recurred after treatment was stopped, resumption of treatment produced relief again. The required duration of treatment varied, as it does when menopausal symptoms are treated with estrogens.

Lancet, London

2:505-550 (Sept. 22) 1951

Sodium. M. L. Rosenheim.—p. 505.
*Results of Streptomycin Treatment in Tuberculous Meningitis. R. S. Illingworth and J. Lorber.—p. 551.
Laboratory Control of Antibiotic Therapy. R. W. Fairbrother, G. Martyn and L. Parker.—p. 516.
*Bell's Palsy: Aetiology, Clinical Course, and Treatment. J. A. James and W. R. Russell.—p. 519.
Action of Sphingosine and Its Derivatives on Tuberculin Sensitivity in Guinea Pigs. N. Fisher, C. Harington and D. A. Long.—p. 522.
Acute Non-Specific Mesenteric Lymphadenitis: Incidence and Prognosis in Children. J. N. Ward-McQuaid.—p. 524.

Streptomycin in Tuberculous Meningitis.—This paper describes the results of streptomycin treatment in 82 cases of tuberculous meningitis observed by the authors between August, 1947, and June, 1950. Thirty-six of these children survived and were followed up by physical, radiological, audiometric, and psychometric methods. Twenty-two of them had no residual physical or mental defect. Three children are of exceptional intelligence. Four had some physical defect but were mentally normal. Eight were retarded, with or without physical defects. Two are still under treatment and apparently have no mental defect. The survival rate in early cases was 73.7% and in advanced cases treatments evidence of structural damage was found in the cortex of the left frontal lobe. Clinical evidence of physical lesions had disappeared 10 weeks after the treatment, but, apart from decrease of the depression, the patient's condition remained unchanged. At least nine months after a course of electric shock treatments the third patient showed evidence of structural changes in the cortex of the left frontal lobe. These changes and the resultant clinical effects had to be regarded as permanent. The fourth patient showed evidence of structural changes in the cortex of the left frontal and parietal lobes two and one-half years after two courses of electric shock treatment. The fifth patient showed evidence of structural changes in the cortex of the left frontal lobe and of the right parietal lobe two months after treatment. Whether these changes and their clinical effects were permanent was uncertain, but it seemed probable on the basis of their severity and wide distribution. Deaths have been reported by other observers following electric shock treatment. In neurological, psychiatric, and electroencephalographic studies made by other investigators both before and after electric shock treatment, there was evidence of disturbed cortical function in a high percentage of cases. Experimental and pathological observations on the effects produced in the structure of the brain in the course of electric shock treatment are also reviewed.

Nordisk Medicin, Stockholm

46:1221-1254 (Aug. 15) 1951. **Partial Index**

*Asphyxia Neonatorum. B. J. Jonsson.—p. 1221.
*"Coronary Failure" Syndrome. A. Grüner and T. Hilden.—p. 1224.
*Coronary Symptoms in Hemorrhages from Gastrointestinal Tract. A. Grüner and T. Hilden.—p. 1227.
Observations in Acute Myocardial Infarction. A. Grüner and T. Hilden.—p. 1229.
Significance of Localization in Prognosis of Cardiac Infarcts. K. Bruzelius.—p. 1231.
Hypersensitivity to Antihistamine Preparations. B. Söderholm.—p. 1232.
Primary Osteosynthesis in Diaphyseal Fractures of Leg. J. Weber.—p. 1238.
Emptying of Stomach After Resection According to Billroth I and II. J. M. Wollesen.—p. 1241.
Potassium Therapy Under Electrocardiographic Control. P. Riising and T. Søttrup.—p. 1243.

Asphyxia Neonatorum.—Asphyxia of the newborn is a functional disturbance that may have various causes. One of the commonest causes of neonatal asphyxia is reduced function of the respiratory center. Injury to the respiratory center from narcosis may result in deficient ventilation that leads to anoxia and further damage to the respiratory center. Anoxia may cause edema and small hemorrhages in the brain; at necropsy it may be impossible to determine whether cerebral bleeding was the cause or the result of asphyxia. Anoxia leads to disturbed function of all organs; if it is severe and prolonged, irreversible changes occur. Cardiac defects in the newborn are often difficult to distinguish clinically from asphyxia. Pronounced cyanosis of hands and feet in the newborn infant may be due to local stagnation anoxia that does not affect the child's general condition. The prognosis in asphyxia of the newborn is not known.

"Coronary Failure" Syndrome.—In many instances coronary heart disease can readily be recognized as angina pectoris or myocardial infarction, but it is more difficult to classify when the pain is of longer duration, especially at rest. Among 145 patients with coronary heart disease treated in 1947-1949, including 54 cases of angina pectoris and 68 of myocardial infarction, Grüner and Hilden found 23 such cases. In 10 cases the diagnosis was angina decubitus, in 6 extracoronary factors were evident, in 2 premonitory pain preceded an attack of acute myocardial infarction, and in 5 the clinical picture was that of "coronary failure," i. e., long-continued angina-pectoris-like attacks not followed by clinical signs of cardiac infarct (Blumgart, Schlesinger, and Zoll). Two cases are reported. The pathogenetic basis for "coronary failure" and premonitory pain in cardiac infarct is perhaps the same in many cases. In coronary failure ischemia occurs in the myocardium, but is not severe enough to cause myocardial necrosis. Some cases of coronary failure are thought to be due to coronary occlusion (Blumgart and Schlesinger). In patients with coronary failure rest in bed is considered necessary. If no signs of cardiac in have appeared in two days, rest in bed for about three weeks advised; hospitalization is recommended.

Coronary Symptoms with Gastrointestinal Hemorrhage.— five men, one aged 56, the others aged 72 or over, with a hist of moderate attacks of angina pectoris, gastrointestinal hem rhage caused symptoms of defective coronary circulation marked pain at rest. In two cases the hemorrhage was acute, three, chronic. Moderate, transient symptoms, which were pre ent in the first three cases, probably result from myocard ischemia, although the presence of small myocardial necro cannot be excluded. The other two cases, in which pain was m pronounced, were fatal; necropsy revealed recent myocard necroses without cardiac infarct. In severe cases the oxyg deficiency in the myocardium is undoubtedly so great that my malacias develop, not necessarily with occlusion of the coron arteries. These cases represent "coronary insufficiency wi myomalacia" (Master and associates). In cases of acute hem rhage without fall of blood pressure and without developm of severe anemia, the coronary symptoms are attributed to co tractions in the coronary vessels, which are possibly a circulato adjustment to the loss of blood. In cases with severe chro hemorrhages anemia resulting from diminished oxygen supp in the myocardium is believed to be the cause of the coronar pain.

Policlinico (Med. Sect.), Rome

58:145-212 (June) 1951

Studies on Behavior of Blood Proteins in Experimental Polyglobuli Due to Cobalt. A. Volta and U. Marinoni.—p. 145.
Action of Vitamin B_{12} Supplemented by Vitamin C and Vitamin K i Experimental Intoxication Due to Benzene: Hematological Aspe A. Di Porto and M. Sebastiano.—p. 172.
*Neoplasms Originating in Areas Affected by Lupus Vulgaris. F. Gu —p. 183.

Neoplasm in Areas Affected by Lupus Vulgaris.—Of 300 p tients with lupus vulgaris observed by the author since 19 cancer developed in 12 patients in the areas affected by t dermatitis. This report and an extensive review of the literatu prove that cancer develops in areas affected by lupus vulgar more frequently than in those affected by other dermatitides. N age or sex disposition was noted. The neoplasm appears ge erally in the exposed areas of the body 15 to 20 years after t onset of the skin lesion. Squamous epithelioma is commones It develops slowly, first toward the surface, afterward toward t deep layers, and causes extensive destruction of tissue. Hist logically it resembles common epithelioma of the skin, but it h malignant characteristics. Its prognosis may be favorable treatment is instituted early. The literature has reported co plete recovery in 60% of the cases. Roentgen and irradiati therapy are the treatment of choice. In studies on the relati between lupus vulgaris and neoplasm, pathogenic factors ca ing appearance of the cancer have been attributed to the hyp plastic and metaplastic epithelial conditions observed in t skin lesions, to the chronic inflammatory stimuli intrinsic to lu vulgaris, and to extrinsic irritating stimuli due especially x-ray treatment of the lesions or to trauma. Experiments we carried out with cancerogenic chemical preparations in anim and with tar in human beings. Primary alteration of the s was followed by secondary proliferation of the epithelium f toward the surface then toward the deep layers. Later, and o when these skin alterations had created predisposing envir mental conditions, the malignant transformation of the c occurred. A similar action is attributed to the skin alterati involving the cells and the connective fibers that precede skin lesions in the human organism. They induce a dermo dermic imbalance that causes a trophic deviation and a distur balance of the internal epithelial cells. In the presence of trophic-plastic imbalance and of predisposing constitutio conditions, the abnormal growth appears. In lupus vulgaris, generative and atrophic conditions of the skin are more nounced than in other types of dermatitis, and this may expl the high incidence of cancer originating in the areas affected this skin lesion.

resse Médicale, Paris

59:1237-1256 (Sept. 22) 1951

lectrocardiographic Studies During Cardiac Surgical Intervention. P. Soulié, M. Touche, G. Delahaye and M. Servelle.—p. 1237.
ompared Biologic Values of Various Glucides Used in Infant Dietetics. M. Vansteenberghe.—p. 1239.
istochemical Contribution to Study of Structure and Destruction of Bones. A. Cretin.—p. 1240.

lectrocardiographic Studies During Cardiac Surgery.—Elec- ocardiographic changes were studied in cardiac patients during x types of surgical intervention on the heart, i. e., mitral val- ulotomy or commissurotomy, pulmonary valvulotomy, peri- ardiectomy, incision of the anterior ventricular wall, establish- ient of shunts for Fallot's tetralogy or tricuspid atresia, and gation of the ductus arteriosus. Although direct clinical obser- ation of the heart remains essential for the control of surgical itervention, the electrocardiogram reveals otherwise undetect- ble cardiac abnormalities, such as variations in the heart ction and disturbances of intraventricular conduction in the resence of a regular action and normal pressure and pulse. he electrocardiogram is of definite aid in the detection of chycardia, arrhythmia, and cardiac arrest. The determination the ventricular or extraventricular origin of tachycardia or extrasystoles is of definite prognostic value. In case of cardiac rest the electrocardiogram becomes essential, because it makes ssible differentiation of true cardiac arrest from ventricular rillation and, consequently, the institution of emergency eatment. In three patients subjected to valvulotomy, lengthen- g of the QT interval at the expense of the ST interval, and a wave with the aspect of the P wave were observed near the d of the intervention. This significant change in the electro- rdiographic tracing occurred after a drop in arterial tension sociated with severe bleeding. The disturbance continued for minutes after the arterial tension was restored to normal by ood transfusion. Electrocardiographic recordings made in the urse of the anesthetic procedures revealed that the adminis- ation of cyclopropane was followed rapidly by ventricular trasystoles, nodal rhythm, auriculoventricular dissociation, cillations of the cardiac pacemaker, and disturbances of the traventricular conduction. Intravenous administration of pro- ine hydrochloride was not always effective in preventing these ntoward reactions to cyclopropane. Pericoronary injection of rocaine hydrochloride seemed to prevent ventricular fibrilla- on that might have been elicited by the incision of the myo- rdium. Electrocardiograms taken in the course of surgical itervention on the heart facilitate the exact study of the be- avior of the heart during the intervention and are useful for e exact and rapid interpretation of occasional complications.

evista Médica de Chile, Santiago

79:421-486 (July) 1951. **Partial Index**

alvular Rheumatic Heart Disease. D. Lamas, R. Barchona, H. Donoso, and J. Barzelatto.—p. 421.
ubacute Bacteral Endocarditis Recognized Only at Autopsy. R. Ortuzar and R. Silva.—p. 429.
Diagnosis of Rheumatoid Arthritis: Experience with 200 Cases. M. Losada L. and O. France S.—p. 439.

heumatic Valvular Heart Disease.—Lamas and collaborators eviewed the clinical and anatomic records of 260 consecutive ases of rheumatic valvular heart disease with inflammation of e valvular orifices, ending in death, which were compiled in a ospital during the 10-year period from 1940 to 1949. Mitral sions occurred most frequently (213 cases). Aortic insufficiency as combined with mitral insufficiency oftener than with mitral enosis; it accompanied mitral insufficiency in 56 cases out of a tal of 83. Eighty-four (32.3%) of the patients were over 50 ears old. A history of previous rheumatic fever was obtained only 89 cases. The period between the first attack of rheumatic ver and the death of the patient varied from less than 5 years 1 cases) to more than 30 years (15 cases). The congestive heart ilure was usually of short duration, whether it was compli- ated by subacute bacterial endocarditis or not; in 76.6% of the ses it lasted less than a year. Subacute bacterial endocarditis as a complication in 40.3% of the cases; it occurred more frequently in men than in women. Rheumatic activity was present in only 16.6% of the patients over 50; in those under 51 it affected 58.3%.

Subacute Bacterial Endocarditis Discovered at Autopsy.—The discovery of the antibiotics and their efficacy in the treatment of subacute bacterial endocarditis has led to revision of the original diagnostic criteria for this disease. Organic murmur and persistent unexplained fever are sufficient reasons for suspecting subacute bacterial endocarditis and initiating antibiotic treatment, but even these symptoms are sometimes lacking. The authors list seven reasons for failure to diagnose subacute bacterial endocarditis during the patient's life: (1) absence of signs of congenital or valvular heart disease; (2) coexistence of some other disease that seems to explain the patient's condition; (3) advanced age of the patient; (4) absence of fever; (5) existence of congestive heart failure; (6) misinterpretation of some of the minor symptoms of subacute bacterial endocarditis; and (7) existence of some complication of subacute bacterial endocarditis, which is mistaken for the primary disease. Avoidance of these errors is essential for diagnosis and treatment. The authors report six cases in which for one or more of these reasons subacute bacterial endocarditis was not discovered until autopsy.

Ugeskrift for Laeger, Copenhagen

113:1147-1176 (Aug. 30) 1951. **Partial Index**

*Treatment of Rh Immunized Mothers and Their Children with Special Regard to Exchange Transfusion: One Year's Material. E. Freiesleben and M. Ingerslev.—p. 1147.
Fulminant Toxic Laryngotracheobronchitis. O. Bouet.—p. 1154.
*Morphine and Asthma. E. Henriksen.—p. 1158.
Codeine Intoxication in Children After "Therapeutic" Doses. T. Samsøe-Jensen and E. Thamdrup.—p. 1163.
Acute Lethal Salicylic Arid Intoxication in Infant After Overdosage. H. Keiser-Nielsen.—p. 1166.
"Restless Legs" Treated with Vasoconstricting Agents. H. Tjell.—p. 1167.

Exchange Transfusion in Infants of Rh-Immunized Mothers.—Of 55 Rh-immunized mothers seen within a year, 48 went to term and abortion was induced in seven. Of the 48 mothers, 4 gave birth to Rh-negative children, who are living and well, and 44 had Rh-positive children, of whom 8 were stillborn. In 14 of the living Rh-positive infants the prognosis was considered favorable and transfusion therapy was not applied; 13 of these are alive and well, 1 child died at 6 months, probably from kernicterus. The remaining 22 Rh-positive infants, believed to have doubtful or unfavorable prognosis, were given exchange transfusion; 20 are well to date, 2 died in the first three days of life, 1 from kernicterus, 1 from intracranial hemorrhage. Freiesleben and Ingerslev based their indications for exchange transfusion, which, they say, should be carried out as soon as possible after birth, mainly on three factors: jaundice at birth or developed in the first hours of life, anemia at birth, and strongly positive Coombs' test. In borderline cases the indication was also supported by a high antibody titer in the mother's blood, earlier transfusion of Rh-positive blood to the mother and history of erythroblastosis in earlier pregnancies. In some cases high erythroblast count or edema in the newborn infant was taken into account. The authors have now performed 14 additional exchange transfusions, with one death.

Morphine and Asthma.—Henriksen reviews the action of morphine on the respiratory center and the respiratory tract and cautions against the use of morphine and preparations with similar properties in patients with bronchial asthma. Even though morphine injection or injection of related substances usually stops an attack of asthma, death during asthma attacks is not rare in patients treated with morphine. He describes the effect of morphine or preparations with similar action in two fatal cases of grave asthma complicated by chronic bronchitis and in a characteristic case of grave asthma probably due to pollen allergy. Stagnation of secretion occurred because of the weakening of the cough reflex from the morphine. The actual cause of death in the two cases was probably an acute aggravation of chronic cor pulmonale; in the case with recovery the electrocardiogram in the critical period revealed signs of acute cor pulmonale. Milder cases in asthma or bronchitis patients given codeine for relief of cough are often manifested by stagnation of secretion and signs of bronchopneumonia.

BOOK REVIEWS

Clinical Urography: An Atlas and Textbook of Roentgenologic Diagnosis. By William F. Braasch, M.D., and John L. Emmett, M.D., Consultant in Urology, Mayo Clinic, Rochester, Minn. Cloth. $25. Pp. 736, with 1361 illustrations. W. B. Saunders Company, 218 W. Washington Sq., *Philadelphia 5*; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1951.

This is an enlarged edition of the 1927 Braasch's Urography. The first chapter, which includes a short historical review and development of this field, also sets forth in concise detail the method and indications for urological examinations. There is a comprehensive discussion of the normal urogram. The authors state that full appreciation of the variations of a normal urogram is the basis of a sound urographic interpretation. The importance of the preliminary film and its revelations are emphasized. No interpretation of a urogram should be undertaken without a plain film. The indications for retrograde and excretory pyelograms are clearly defined. The authors recommend initial excretory films in children and injured persons, and in cases of anomalies and neoplasms. The importance of making an excretory pyelogram preliminary to cystoscopy, especially in hematuria, is well covered. Retrograde films are found valuable in that they provide good, clear definition for interpretation and useful information in delayed films. The interpreter is cautioned against making a diagnosis from poor films, either intravenous or retrograde.

This volume contains an excellent reproduction of a collection of well-preserved genitourinary films. The entire field of genitourinary lesions and anomalies is well presented, and many lesions are illustrated several times. The interspersing of excellent reproductions with the discussion of extraurinary lesions and shadows is instructive. The many fine examples of rare lesions could only be gleaned from such a large volume as the 100,000 films taken at the Mayo Clinic. The conservative and practical interpretation of the films presented gives the reader added confidence in the value of this volume. Nearly all of the final diagnoses have been confirmed at operation. The chapter on renal arteriography is well written; however, the necessity of the "pressure apparatus" for injection into the aorta is questionable. In the perusal of this volume, the urologist, the surgeon, and the roentgenologist can obtain many helpful aids in exact diagnosis through the use of genitourinary films. As a reference for both the practicing physician and the student, this volume is unequaled at the present time. The clear reproductions and their concise legends will enhance the reader's knowledge of the field of urology.

A Pediatric Manual for Mothers: Questions and Answers on Care and Feeding of Infants and Children. By Harry R. Litchfield, M.D., and Leon H. Dembo, M.D. Cloth. $2.50. Pp. 269. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

This is a small book by two pediatricians with long experience in dealing with the big and little questions that concern new parents. Its subject index is complete in the basic matters of growth, feeding, common disease conditions, and emergencies, as well as some of the more recently popularized diseases and therapeutic agents. Sections on the recently developing problems related to comic books, television, and camp life are also included. The information is presented in a question-and-answer form, which well serves the purpose of providing brief, readily accessible factual information to mothers, so that the work of the pediatrician will be facilitated. This style of composition sacrifices the more complete information obtainable from the more ponderous discussion type of presentation and makes this volume useful primarily as a reference. The book can be highly recommended for the authentic and up-to-date information provided for the guidance of mothers in the care of young children. Its simple, straightforward statement of the facts and completeness of coverage makes it outstanding in its field.

Allergy in Relation to Pediatrics. By Bret Ratner, M.D., Profess Clinical Pediatrics (Allergy) and Associate Professor of Immunolog York Medical College, New York. Panel Discussion. By T. N. Har M.D., and others. Official publication of American College of Allerg Cloth. $3.75. Pp. 228, with illustrations. Bruce Publishing Company, University Ave., St. Paul 4, Minn.: Box 1586, Minneapolis, 1951.

This volume provides an excellent coverage of the most i portant phases in the field of pediatric allergy. It includes imm nological considerations, the question of infection, clinical phas and manifestations in infants and young children, several discu sions on the evaluation of skin tests, some psychosomatic aspect and the most important aspects of treatment. The contributio are by authorities in the field of allergy and pediatrics, and i clude such well-known names as Lewis Webb Hill, Edwa Scott O'Keefe, William C. Deamer, M. Murray Peshkin, B Ratner, Albert V. Stoesser, Jerome Glaser, and T. N. Harr The pediatric phases of this subject are repeatedly emphasiz Some errors and unproved statements are found, but it is markable that with such a diversity of authors they are not mo numerous. For the most part the material is sound, practic and reliable. Most chapters have representative bibliographi As is to be expected in the case of such symposia or panel d cussions, these are not complete expositions of the field of aller For the beginner in the study of allergy this reference bo would have to be supplemented by reference to other texts c taining more detailed information on allergenic causes, such pollen and fungi, and also on other phases of allergy. This bo should be useful to allergists, pediatricians, dermatologists, general practitioners and can be highly recommended for purposes intended.

Coxitis tuberkulosa: Ein Beitrag zur röntgenologischen Pathologie Skelettuberkulose. Von Dozent Dr. Herbert Gardemin, Chefarzt der or pädischen Abteilung des Evangelischen Waldkrankenhauses, Berlin-S dau. Band 26, Sonderbände zur Strahlentherapie, herausgegeben von H Meyer. Cloth. 18 marks. Pp. 166, with 245 illustrations. Urban & Sch zenberg, Thierschstrasse 11, Munich 22; Meinkestr. 13, Berlin W. 15, 1

For a monograph that has set itself a rather limited sc namely the tuberculous disease as represented in the roentge gram, this is a work of remarkable breadth of vision. The aut starts from the established pathological distinction betw caseous and granulomatous forms, a division that is consiste observed throughout the entire book. The specific interest the subject of hip joint involvement is safeguarded by t graphical analysis of the various localizations. Each of thes then given, with proper evaluation regarding the prognosis course of the disease. The author describes in turn the physial, the cervical, the cortical, the metaphysial, the acet lar, the trochanteric and the capsular localizations, all well d mented by roentgenograms and case reports. The epiph localization is well characterized by the appearance of seque fragmentation, and rapid decay of the diseased area. Aga the central cervical type, the author emphasizes the early pearance of areas of the translucency. The cortical metaph zone of translucency contains a sequestrum with a tendenc perforating in the joint. In the acetabular focus, a poin peculiar importance, he finds multiple areas of destructio the various stages in the acetabulum and secondary chang the neck, and rapid progressive destruction of the acetabu The trochanteric type is presented by three cases, a com tively rare localization usually of caseous nature. Of specia terest is the demonstration of the capsular or synovial which presupposes primary synovial tuberculosis, a point th still debatable. Here the author presents evidence of wha pears to be a primary capsular shadow with secondary oss involvement. The section on differential diagnosis is ver structive, particularly as far as the osteochondritis defor coxa is concerned. Much attention is given to the x-ray thology of the late stage and the ultimate outcome of e the normal joint or the osseous or fibrous ankylosis or of

---

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

rthrosis. In this connection the author emphasizes that reorganization of the joint with complete function is, contrary to he general belief, not a rarity and that the infection by no means always ends with ankylosis. At the same time the author agrees with Lorenz that ankylosis is preferable to an inferior even though partially movable joint.

All this is splendidly illustrated and documented by 88 cases and roentgen ray reproductions of indisputably high quality. There is no question that this book, as far as its scope reaches. s excellently written and ought to be of great value to the reader. The author is to be commended for the precision and accuracy with which he has handled this subject.

Grouping, Typing and Banking of Blood. By Otakar Jaroslav Pollak, M.D., Ph.D., F.C.A.P., Director, Blood Bank, Quincy City Hospital, Quincy, Mass. Cloth. $5.75. Pp. 163, with 25 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queens St., W., Toronto, 2B, 1951.

This book is written as a simple introduction to the complex field of blood grouping and blood banking for the use of technicians, house officers, and nurses. Although there is need for such a volume, the present book is unsatisfactory because of numerous errors, misprints, and considerable misinformation. In this review there is only room to mention a few of the more blatant errors. In Table 3 on page 8, the symbols for alpha and beta have been interchanged. On page 10, the statement that there are eight different antibodies specific for the various subgroups of A and AB is untrue. On page 13, the S factor is incorrectly referred to as a third allelomorph in the M-N system. On page 14, Henry is incorrectly credited with the discovery of the Kell system, while his paper, as shown by the title in the bibliography, dealt with an entirely different subject. In Table 14, on page 19, there is a blood labelled group AB, whose cells are agglutinated by serum of all other groups but whose serum agglutinates bloods of groups A and B and not groups O or AB; manifestly, no such blood exists. In describing the antiglobulin test on page 144, the author states that the antiserums are prepared by immunizing rabbits with red blood cells that have been washed 8 to 10 times; this is also untrue. For every patent mistake there are numerous misstatements of a more subtle nature. Obviously, the beginner who accepts this book as authoritative will acquire much misinformation and many incorrect concepts. This book cannot be recommended.

The Essentials of Modern Surgery. Edited by R. M. Handfield-Jones, M.C., M.S., F.R.C.S., Senior Surgeon to St. Mary's Hospital, London, and Sir Arthur E. Porritt, K.C.M.G., C.B.E., M.A., a Surgeon to His Majesty The King, London. Fourth edition. Cloth. $11. Pp. 1263, with 644 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1951.

The frequent revisions that this remarkable text has undergone since its first edition 12 years ago speak favorably for its neoteric quality and its coverage of recent changes in the management of surgical patients. Yet its main value consists in its handling of time-tested principles concerning the diagnosis, etiology, and pathogenesis of surgical disease. Attractively compiled by the two editor-authors, this volume of 51 chapters contributed by 14 surgical authorities is a useful textbook for medical students and should serve well as a reference work for the general practitioner and the surgical resident. Though not designed primarily for the trained and mature specialist, it should appeal to him as a guide for the broad aspects of various surgical fields outside his particular specialty. The wide scope of material spanned by this large volume includes general surgery and all the surgical specialties, with the exception of ophthalmology.

The book may be criticized on grounds that some of the suggested minor remedies and medications are outmoded and are seldom seen in modern surgical management. Perhaps this merely represents variation between British and American methods. Certainly the tannic acid coagulation treatment of burns is no longer considered the best procedure in up-to-date institutions here. Criticism of the book's scanty discussion of some therapeutic innovations is perhaps also justified. For example, only cursory mention is made of the use of radio-iodine in the treatment of carcinoma of the thyroid and no mention at all of its use in hyperthyroidism, a practice which in the United States is replacing surgery in a large number of selected cases. Also, the importance of vagotomy with gastroenterostomy supplanting subtotal gastrectomy in the treatment of duodenal ulcer is minimized.

The vast majority of the chapters were written by the two editors, who have arranged the text in a wholly logical fashion, devoting the earlier chapters to the more general considerations in surgery and subsequent chapters to the various organ-systems and specialties. Most of the chapters are presented with utmost clarity of organization and frequently open with a preliminary outline of the material covered. This systematic arrangement, combined with an attractive format, facilitates the use of this book as a reference manual. Especially commendable is the chapter on tumors, wherein a usable classification of neoplasms is presented followed by a concise discussion of each type. Titles and subheadings appear in conspicuous, bold-faced type, and the print throughout is large and easily read. The margins and spacings are liberal, and the index is adequate. Illustrations are abundant and are well selected to clarify the text. Nearly half of them are photographs of clinical material and radiograms. An additional one-fourth are amply descriptive reproductions of gross pathological specimens removed at surgery. Four per cent of the illustrations are drawings of microscopic sections, so precisely executed that one wishes there were more of them. As is characteristic of British scientific publications, the authors' literary standards are high, the style of writing is pleasing, and the content is readily understood.

A Color Atlas of Morphologic Hematology with a Guide to Clinical Interpretation. By Geneva A. Daland, B.S., Chief Laboratory Assistant in Hematology, Thorndike Memorial Laboratory, Boston City Hospital, Boston. Edited by Thomas Hale Ham, M.D., Assistant Professor of Medicine, Harvard Medical School, Boston. Cloth. $5. Pp. 74, with illustrations by Etta Piotti. Harvard University Press, Cambridge 38, Mass.; Oxford University Press. Amen House, Warwick Sq., London, E.C.4, 1951.

The purpose of the atlas as stated is to furnish a guide for reference in the study of films of peripheral blood stained with Wright's stain. This purpose is fulfilled by both text and plates, most of which are in color and represent camera lucida composites. The text is good and is obviously written by one well versed in hematologic techniques and acquainted with the importance of correlating them with clinical findings. At times, references to prognosis and therapy creep in that seem quite out of place. It is unfortunate that almost no cognizance is taken of the recently recommended terminology for the classification of blood cells.

With the exception of the lower half of plate 4, which completely fails to capture the picture of a severe iron deficiency, the color renditions reflect the artist's wide experience with microscopic hematologic material. The most disconcerting feature of the atlas is the constant reference to the *Syllabus,* a feature that makes one wonder why the atlas was not made a part of the syllabus or the syllabus a part of the atlas. The book should be found useful by beginner, whether technician or student.

Labelled Atoms: The Use of Radioactive and Stable Isotopes in Biology and Medicine. By Raymond Glascock, B.Sc., Ph.D. Sigma Introduction to Science 18. Cloth. $1.25. Pp. 227, with 58 line drawings by Doris E. Jones. [Interscience Publishers, Inc., 250 Fifth Ave., New York 1]; Sigma Books Limited, 7 John St., London, W.C.1, 1951.

This book is one of a series by various authors summarizing the present status of various branches of science in a way that enables a specialist in one field to understand what goes on in another. The presentation is not "popularized," as it presupposes some scientific knowledge, such as the ability to appreciate the structural formulas of organic chemistry. In the present volume Glascock deals in this manner with isotopes, both the stable and radioactive kinds, used as tracers in the biological sciences, including medicine, and agriculture. The text is lucid, and the illustrations are good. There are references at the end of each chapter, and the index is adequate. The book is recommended to physicians seeking a readable, authoritative introduction to this subject.

Tratamento cirúrgico das moléstias mentais (leucotomía). Por Mario Yahn, A. Mattos Pimenta e Afonso Sette Junior. Paper. Pp. 293, with illustrations Gráfica e editôra Edigraf Ltda. Rua da Figueira, 701/5, São Paulo, 1951.

It is gratifying to find that there are summaries in English and French at the end of each chapter of this book. It is on the basis of these summaries that this review is made. Although there are instances in which the English translation is taken out of the Spanish context, the material is easily understood. There is a full index as well as a prologue by Egas Moniz, a Nobel Prize winner. The authors have had much experience in the surgical treatment of mental illnesses. Their data are documented with scrupulous care and objective honesty. Full discussions of some of the approved techniques are presented, with comparisons as to their relative efficacy. However, it is unfortunate that two fairly successful techniques employed in this country are not included in the summary, i. e., the undercutting operation of Scoville and the topectomy, as popularized by Pool. Interesting studies are made on the basis of differential and incomplete lobotomies. An interesting chapter is devoted to the treatment of intractable epilepsy with lobotomy; six patients with chronic epilepsy were thus treated. Unfortunately, the English translation does not specify whether the improvement described occurred in the epileptic attacks or in the concomitant personality disorders. It is difficult to grasp the rationale of this form of therapy in epilepsy.

The percentage of improvement in the routine lobotomies roughly paralleled those reported in this country. In addition, the authors describe a group of 22 patients on whom perietal lobotomies were performed. The needle was introduced perpendicularly at the maximum parietal convexity, and an incision 2 cm. by 2 cm. was made. In only two cases was there improvement resulting from this technique. For those specifically interested in the surgical treatment of mental illnesses, the statistical results in a large series of cases will be a valuable source of reference.

A Text-Book of Medicine. Edited by E. Noble Chamberlain. Cloth. $10. Pp. 962, with 266 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1951.

This book includes contributions from 17 Liverpool authors, each dealing individually with his subject. There is something to be said in favor of the text from the standpoint of the medical student who desires a brief and easily read summary of the important features of a disease with which he is not familiar. Of particular value to the beginner are comprehensive sections in neurology, psychosomatic illness, tropical medicine, and toxicology. The book is free of the redundancy of many other medical texts and yet complete enough to help the average student in medical school; however, it is not likely to please the energetic student of graduate medicine in hospital practice, because it touches only "high spots" of many diseases of importance, does not possess a bibliography, fails to consider sufficiently the collagen group of diseases and the electrolyte disturbances, is confusing in the description of hepatic and cardiovascular disease, and falls far short generally in its consideration of therapy exclusive of the unavoidable out-datedness common to medical texts. A just comparison cannot be made with the more detailed and complete textbooks recently edited by American authors, since this text is more elementary. The type is moderately large and is legible. The illustrations are not especially useful, though several are in color.

Clinical Hematology. By Maxwell M. Wintrobe, M.D., Ph.D., Professor of Medicine and Director, Laboratory for Study of Hereditary and Metabolic Disorders, University of Utah, College of Medicine, Salt Lake City. Third edition. Cloth. $12.50. Pp. 1048, with 237 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

In bringing this book up-to-date, the general format and plan of previous editions have been retained. However, where the advances have been significant, large sections have been rewritten; as in the discussion of cytochemistry, coagulation, ionizing radiation, and hemolytic anemias. New charts and diagrams have been added, which in many instances enhance the value of the book by their simplicity and clarity. The illustrations as a whole are excellent, though the color plates, by and large, are poor, both in detail and color rendition; this is especially true of plates 2, 7, and 8. The bibliography is most extensive remarkably up-to-date.

As an inevitable consequence of the tremendously expa size of the book (almost 200 pages added), some sections only been brought up-to-date by the insertion of new data. T gives the book a rather staccato style, in parts, making rea somewhat difficult. Because of gradual expansion, the boo starting to lose the character of a textbook and is becom more of a reference. Its growth reflects both the intrinsic grow of hematology as well as the relative growth of hematolog the field of general medicine. The new edition retains the p eminence established by its predecessors and remains the b available book for both hematologists and internists.

Sex Offenses: The Problem, Causes and Prevention. By Manfred Guttmacher, M.D., Chief Medical Officer, Supreme Bench of Baltim Cloth. $2.50. Pp. 159. W. W. Norton & Company, Inc., 101 Fifth Av New York 3, 1951.

This book is divided into three parts: the cause of sex o fenses and problems incident thereto, clinical aspects of s offenses, and the treatment and prevention of such offenses. the first part of the book, literature on sexual offense, especial homosexuality, is reviewed to show that knowledge of hom sexuality and kindred subjects is not "sufficient for us to do matize and legislate without reservation." The second part r views clinical findings in the cases of 172 sexual offende referred to the Psychiatric Clinic of Baltimore by the Crimin Court of Baltimore. It also reviews similar statistical studies this subject by others.

The author states that no one study, including his own, repo a true random sample of sex offenders. The theme of this p of the book is that great need exists for scientific studies co cerning the various aspects of sexual offenses. The conclud portion of the book discusses social concepts concerning sexu offenders, special statutes adopted by several jurisdictions rel ing to the handling of "sexual psychopaths," and the autho solution to the problems concerning sexual offenses. Princi recommendations, with supporting reasons, are that there sho be more scientific study of the problem and that medical scien should be brought more directly into the criminal court proce Although written so a layman may read and understand it, book maintains a commendable level of professional decor and dignity.

Psychoanalysis and Politics: A Contribution to the Psychology of Poli and Morals. By R. E. Money-Kyrle. Cloth. $3. Pp. 183. W. W. Norton Company, Inc., 101 Fifth Ave., New York 3, [1951].

This short book represents a practical attempt to apply knowledge gained through psychoanalytic psychology to problems of international politics. Unconscious processes are lieved to strongly influence political desires and beliefs. The thor came to this conclusion partly as a result of observatio made as a member of an official group charged with the selecti and placement of suitable Germans in positions of trust a political responsibility in postwar Germany. Discussion mai concerns the distinction made between two types of conscie or superego, the authoritarian conscience and the humanist c science. The authoritarian type of conscience is considered predominant type in prewar Germany. This in its extreme fo was found under Hitler and national socialism, dominating official class of Germans, and causing the German people become docile but efficient executives. It is considered sig cant that members of official classes had been trained for m years to accept any moral code imposed on them from ab whether by the Hohenzollerns, by the Weimar Republic, o Hitler. The author points out that the authoritarian typ conscience tends to increase its influence and spread as a re of the authoritarian nature of early home environment. This found mostly among persons whose work was of an adm trative nature. The humanist conscience, on the other h was found more frequently in persons from homes that ha large degree of freedom and affection and in which the pa were engaged in the arts or sciences. It seems that an inevit result of bureaucracy was the development of an increasing n ber of persons with the authoritarian type of conscience a decreasing number with the humanist type of conscience.

The author concludes that the humanist character and humanist morality in general are attributes of a wisdom that consists of insight into ourselves and others and that this type of personality can thrive only in the kind of state that seeks to provide welfare without curtailing freedom. The main impediment in achieving such a state is believed to be the influence of unconscious motivation on political thinking. This impediment could be removed only by making such motivation conscious through insight.

A point of particular importance concerning the activities of Germany in wartime is the apparent ease with which authoritarianism could sufficiently suppress guilt in the official or individual so that he could carry out acts of the most malignant persecution while considering himself to be acting only routinely and morally as an instrument of a higher power.

The author has performed a valuable public service in writing this book. It can be read with interest and gain by the general public, and particularly by those who seek and accept positions of political trust and responsibility.

Prothrombin Deficiency. By Rosemary Biggs, M.D., Department of Pathology, Radcliffe Infirmary, Oxford. Publication number 121, American Lecture Series, monograph in American Lectures in Hematology. Edited by Russell L. Haden, M.D. Cloth. $2.50. Pp. 83, with 14 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

In this small monograph emphasis is placed on the practical use of methods in the study of prothrombin deficiency. Dr. Biggs' excellent background is well reflected in this readable book. The two stage method for estimation of prothrombin as it is described is perhaps not the best procedure for quantitative accuracy. Although there are papers in the literature that show that prothrombin can be measured accurately by this method, this was not possible with the procedure outlined in the monograph. The book does, however, emphasize the fact that useful information can be obtained from blood coagulation tests of all kinds. The tests are being abused when unjustifiable meaning is given to the data they furnish. One chapter is devoted to Quick's theory of prothrombin A and B, and the theory of a percursor of prothrombin in plasma, and it is pointed out that Quick's hypotheses are not proved by his experiments. Dr. Biggs has rendered a service by challenging the authoritative viewpoint. The appendix contains much useful technical information. There are 90 references to the literature. Although the book will probably be most useful to those who deal with this subject in the laboratory, it will also be of aid to the specialist. It is a well-considered contribution.

Determinative Bacteriology Laboratory Manual. By Thomas H. Lord, Associate Professor of Bacteriology, Kansas State College of Agriculture and Applied Science, Manhattan. Paper, loose-leaf. $2.25. Pp. 63, with charts. Burgess Publishing Company, 426-428 S. Sixth St., Minneapolis 15, 1951.

This laboratory manual was apparently designed for a beginning course in bacteriology. It consists of a series of 28 exercises, the first 17 of which are devoted to a cursory study of the morphology, staining reactions, and biochemical characteristics of bacteria. The remaining exercises contain procedures for the identification of the common members of the Eubacteriineae.

The omission of many methods of practical value to a bacteriologist is to be deplored. The preparation of media, the operation of an autoclave, and the techniques of filtration and of bacterial counting are not touched upon by the author. A working knowledge of these procedures is essential for the practicing bacteriologist.

Simple procedures are given undue emphasis. For example, six entire exercises are taken up with the demonstration of six bacterial stains. Laboratory time spent in this way merely contributes to the boredom of the student. Compression of the material presented and the addition of exercises on the practical aspects of the subject should result in a stimulation of the student's interest. It is hoped that the all too few exercises presented in this manual are supplemented with additional material in both the classroom and laboratory.

Lehrbuch der Neurologie in 2 Teilen. Die Nervenkrankheiten. Von Prof. Dr. Georges Schaltenbrand. Cloth. 87 marks. Pp. 880, with 539 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

It is a pleasure to again have available thoroughly prepared scientific textbooks from Germany. This book has been prepared primarily for students and as a source of summarized neurological information for physicians. It covers the field well and includes a section on endocrinology and a brief discussion of psychogenic disorders. The material is clearly presented. For the most part, the various subjects are discussed briefly though adequately for the purposes of the book. This is not a reference book for the specialist desiring exhaustive treatment of the subject. The book is profusely illustrated, and the photographs, roentgenograms, and diagrams are well chosen. There is an extensive bibliography at the end of the text that is arranged in the same order as the chapters of the book. Although the majority of the references cited are in German, there is a representative selection of papers from the English, American, French, and other literatures. There is a satisfactory index.

Cunningham's Text-Book of Anatomy. Edited by James Couper Brash, M.C., M.A., M.D., Professor of Anatomy, University of Edinburgh, Edinburgh. Ninth edition. Cloth. $14. Pp. 1604, with 1252 illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E.C.4, 1951.

The retirement of Dr. E. B. Jamieson, coeditor since 1937, and the death of four former contributors has resulted in the addition of several new and distinguished names to the list of contributors to this volume. The text of this edition has been revised by all contributors and brought up-to-date by the insertion of references to new works in each chapter. New illustrations, including drawings, roentgenograms, and photographs of living models, have been added; older illustrations have been improved. The Birmingham revision of the Basle Nomina Anatomica is used throughout, although a complete glossary at the beginning of the book provides the Latin, B. N. A., and Nomenklatur Commission synonyms. This encyclopedic work is recommended to all students of anatomy.

Roentgen Examination of Pleural Fluid: A *Study of the Localization of* Free Effusions, the Potentialities of Diagnosing Minimal Quantities of Fluid and Its Existence under Physiological Conditions. By Ingemar Hessén. Acta radiologica, supplementum 86. Translated by K. M. Lindskog. Paper. 20 Swedish crowns. Pp. 80, with 98 illustrations. Appelbergs Boktryckeriaktiebolag, Uppsala, 1951.

This supplement begins with a review of the literature, with special attention devoted to infrapulmonic localization of pleural fluid. This is followed by a discussion of the techniques used to demonstrate minute amounts of fluid in the pleural spaces, of which the inclined side position, "hip raised," is considered the best. The normal physiologic occurrence of small amounts of pleural fluid forms part of the study. The author concludes that pleurisy cannot be diagnosed from the presence of fluid alone.

Case histories and details of experimental studies are given. The bibliography and the reproductions of roentgenograms are good. The supplement is well written and will serve as a valuable addition to the references on this subject.

The Scientific Paper: How to Prepare It, How to Write It, A Handbook for Students and Research Workers in All Branches of Science. By Sam F. Trelease. Second edition. Cloth. $2.50. Pp. 163, with 8 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1951.

This book is not limited to medical papers but applies to other fields as well. The author discusses the arrangement and treatment of scientific data as well as the process of first outlining then rewriting scientific papers so that they are in proper form for publication. Some of the details considered are ways of making the paper interesting, the preparation of tables, footnotes, and legends, the use of abbreviations, punctuation and capitals, and the preparation of graphs and illustrations. This handy, pocket-sized book sh[illegible] to scientific writers, especially those not familiar [illegible]ments of the better journals.

Precepts and Counsels of Scientific Investigation: Stimulants of the Spirit. By S. Ramón y Cajal. Translated by J. Mª. Sánchez-Perez, M.D. Edited and annotated by Cyril B. Courville, M.D., Professor of Nervous Diseases (Neurology), College of Medical Evangelists, Los Angeles. Cloth. $9.50. Pp. 180. Pacific Press Publishing Association, Mountain View, California, 1951.

This book consists of a series of essays designed to convey encouragement and counsel to the young scientific investigator. The text is an adaptation of the address by Dr. Cajal at the time of his appointment to the Royal Academy of Medicine in 1893. Dr. Cajal's observations and advice are of such a fundamental and ageless nature that they can be read in the United States today with the same enjoyment and enthusiasm that greeted their first appearance in Spain over a half century ago. The author's style is clear and forceful and is leavened with many deftly humorous passages. A wide variety of subjects are touched upon. These include a consideration of the moral qualities desirable in the investigator, social conditions favorable to scientific work (with a discussion of the type of wife best suited to the man of science), steps in scientific investigation, writing for scientific publication, and the "illustrious failures" in science, "the dilettantes or contemplators, the erudite or bibliophiles, the instrument addicts, the megalophiles, the misfits and the constructors of theories"! This book can be recommended to students, research workers, and physicians with the expectation that it will be read with profit and entertainment.

Personality & Psychosis. By Otho W. S. Fitzgerald, M.A., M.D. Cloth. $2.50. Pp. 134. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; Baillière, Tindall & Cox, 7-8, Henrietta Street, Covent Garden, London, W.C.2, 1951.

This book discusses the need for a more distinct method of personality typing, which would enable the psychiatrist to correlate the psychotic manifestations of patients with prepsychotic types. A list of 24 possible combinations of three acquired traits and three clusters of genetic types that make up the per- nality type is presented. The three genetic types are the im- uous extravert personality, the deliberate extravert personal- and the introvert personality; the three acquired traits are the s rical, obsessional, and paranoid. Case examples of each type are presented. This system appears to be based primarily on original concepts of the author formed in an attempt to extend the principles of Kraepelinian diagnostic methods. In this sense the author appears to move away from the more modern concepts in psychiatry, which tend toward diagnosis on an individual basis, and away from the more rigid diagnostic groupings.

The Control of Cross Infection in Hospitals. By Cross Infection in Hospitals Committee of Medical Research Council. Medical Research Council *memorandum* no. 11. New Edition. Paper. 1s. 9d. Pp. 49, with 6 illustrations. His Majesty's Stationery Office, Box 569, London, S.E.1, 1951.

In addition to embodying the main recommendations for the control of cross infections contained in the original edition, this pamphlet presents various practical procedures in greater detail. Subjects discussed include types of infection, sources and modes of infection, prevention and control of cross infection, and general measures and special precautions to be taken when specific cross infections develop. Included in the appendixes is information concerning techniques of disinfection and sterilization, rules for isolation and for wound dressing, special precaution for maternity units, and the application of dust-laying oils to floors, blankets, and linen. An extensive bibliography is provided.

Proceedings of the Second Clinical ACTH Conference. Vol. I: Research. Vol. II: Therapeutics. John R. Mote, M.D., editor. Cloth. $17 per set. Pp. 531; 716, with illustrations. The Blakiston Company (Division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1951.

Many of the discrepancies in arrangement of the first proceedings have been overcome by the editor in the transcript of the second ACTH (corticotropin) conference. Wisely, the contents have been divided into research and therapeutic volumes. In the former, corticotropin is discussed by various authors according to physiologic effect upon anatomic systems and metabolic effect upon protein, carbohydrate, fat, vitamins, and electrolytes. Certain pathologic conditions are also included in
first volume, since fundamental studies on alterations of
immunologic response during corticotropin therapy are
volved. In the volume on therapeutics, the many accepted c
ical indications for corticotropin are reviewed, but the orga
zation is by no means as clear cut as in the research volu
As with the first proceedings, the most serious discrepancy
the second is the lack of an index. Short of thumbing thro
the entire table of contents or acquiring thorough familia
with the papers presented, the reader is at a loss to find c
references. Nevertheless, this minor hardship does not det
from the value of the volumes as an excellent source refere
for the latest corticotropin experience.

Children's Radiographic Technic. By Forrest E. Shurtleff, R.T. C
$3.75. Pp. 80, with 32 illustrations. Lea & Febiger, 600 S. Washington
Philadelphia 6, 1951.

Although this small volume carries important informa
about the small area of roentgen ray examinations for inf
and children, still one finds many good and simple instruct
that will help both technician and radiologist. Immediately
thinks of how useful this book would be to pediatricians an
physicians doing their own radiography in small centers.
posure charts are extensive, but in no instance are less than
ma. used. Such high-powered equipment is rarely avail
except in large hospital installations. Again, experience
proved that sedation, anaesthesia, and even a better psy
logical approach are required for babies and children. These
not in the index and are not discussed, although such words
found in the text at least once. There are a great many additi
techniques for infant and preadolescent radiographic proced
in other institutions, and it would not be amiss for a second
tion to describe some of them and also tell how these exam
tions are conducted with 100 ma. technique, because th
possible. The book describes the techniques successfully use
the author but allows no flexibility or duplication, except in
in which similar apparatus is available.

Medical Treatment: Principles and Their Application. Edited by
frey Evans, M.D., F.R.C.P., Consulting Physician, St. Bartholom
Hospital, London. Cloth. $20. Pp. 1464, with 51 illustrations. C. V. M
Company, 3207 Washington Blvd., St. Louis 3; Butterworth & Co.,
4-6 Bell Yard, Temple Bar, London, W.C.2, 1951.

This is a compendium of medical treatment contributed
most exclusively by British authorities that presents the treatm
preferred by the individual authors. Nevertheless, a surprisi
even presentation has been secured by the editor in all sect
of the text. Valuable sections ordinarily not found in sim
volumes concern addiction, industrial diseases, nuclear ra
tion, and toxicology. Because of its organization, treatmen
a disease is not considered as an entity; thus, treatment of tu
culosis is described separately under children's diseases, u
each system, and again under infectious diseases; Still's
ease is separated from rheumatism and allied disorders. L
space is devoted to diagnosis, with the major emphasis g
to treatment, including general measures, prophylaxis
curative, remedial, and supportive measures. This would be
excellent reference text except that the rapid progress in a
biotic and hormonal treatment of disease in the past year
made certain sections obsolete.

Progress in Neurology and Psychiatry: An Annual Review. Volum
Edited by E. A. Spiegel, M.D., Professor and Head of Departme
Experimental Neurology, Temple University School of Medicine,
delphia. Cloth. $10. *Pp.* 562. Grune & Stratton, Inc., 381 Fourth
New York 16, 1951.

The editorial board of this annual review attempts in
volume to develop an up-to-date encyclopedia of neur
and psychiatry that will provide an easy reference to a
progress in these disciplines, particularly for the specialist
volume has four main parts, which concern clinical neuro
clinical psychiatry, related basic sciences, and neurosu
A total of 72 contributors participate in providing a wide
erage of newest developments in the fields mentioned. Th
tors have performed a useful service by supplying a quick
easy reference to much that is new in these fields in the
year for both the specialist and the general practitioner.

Über die Pathologie der vegetativen nervösen Peripherie und ihrer gang-nären Regulationsstätten. Von F. Feyrter, o. Professor der Pathologie der Universität Göttingen. Boards. $5.70. Pp. 201, with 58 illustrations. ilhelm Maudrich, Spitalgasse 1B, Wien IX/2, 1951.

Although this book is written primarily for the pathologist, has some interest for the clinician, as it reflects the great emhasis at present being given in Germany (greatly under the fluence of Stoehr) on abnormalities of the vegetative nervous stem as a cause of various diseases. This book is not easy to ad, but it does present in very logical fashion the abnormal anges of the vegetative nervous system, including that of the tramural and extramural ganglions. Such changes are found many diseases, such as certain forms of appendicitis, neuroromatosis, leiomyomas, lipomas, carcinoids, and adenomatous lyps of the intestine. In view of the great importance of the chnique used, a chapter dealing with histologic technical probms is welcome. The last chapter, which deals with the general inciple of neurons and cells, emphasizes the syncytial charter of the body structures. The many illustrations, technically t too well reproduced, assist in the presentation of the author's allenging arguments.

Angiocardiography as a Diagnostic Aid in Congenital Heart Disease. J. W. C. de Groot, M.D. Cloth. Pp. 108, with 20 illustrations. Keesing, ysdaelstraat 71, Amsterdam, 1951.

This brief volume is divided into two major sections. The first art is devoted to a rather detailed review of the literature, covering history, apparatus, contrast material, risk, and a discussion f the value of angiocardiography; this section is based on the ork of others and is complete from this standpoint. The second ction is devoted to examples from the author's experience in any different types of congenital heart disease, in both cyanotic nd acyanotic. An example of each type of heart disease is given, cluding history, laboratory work-up, and an angiocardioaphic example. The value of the angiocardiogram and differenal diagnosis is discussed in each case. Illustrations are limited, d the reproductions are fairly good. A diagnostic sketch presnted with each illustration greatly enhances the interpretation. hose interested in a review of angiocardiography and case hisries of various types of congenital heart disease will find the ook valuable.

Psychology and Its Bearing on Education. By C. W. Valentine, M.A., .Phil. Cloth. $6. Pp. 674. Philosophical Library, Inc., 15 E. 40th St., ew York 16, 1951.

This introduction to the study of psychology is presented in form that will be useful primarily to teachers, leaders of youth ovements, social workers, and other persons interested in modrn education. The material relates to practical applications of e interrelated psychological problems of teachers and students s well as the psychological principles involved in processes such s learning and remembering. The author has stressed most trongly the phases of application of psychology to basic eduation that have been accepted most generally by competent sychologists. A section of the book on appreciation of beauty nd aesthetic education in relation to visual art, music, and oetry is given considerable space in the book, because of a ecognized lack of such material in many textbooks. Teachers, articularly in the more progressive schools of education, should erive much practical value from this book.

The Early Diagnosis of the Acute Abdomen. By Zachary Cope, B.A., .D., M.S., Consulting Surgeon to St. Mary's Hospital, Paddington. enth edition. Cloth. $3.50. Pp. 270, with 38 illustrations. Oxford Unirsity Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., ondon, E.C.4, 1951.

This monograph has become a classic in surgical literature. rom the physiological point of view, it is lacking, but from the oint of view of straight surgical diagnosis, it is a magnificent ttle volume, which will prove as useful as its previous editions. lthough some new material has been inserted, this edition does ot represent a major revision. The illustrations remain the same, ith the exception of one new roentgenogram. This volume will e useful not only to medical students, assistant residents, and sidents but to the large group of surgical practitioners who ish to have at hand, in a small, concise monograph, some of e major practical diagnostic features of the acute abdomen.

The Child Unborn. By R. J. Harrison, M.A., D.Sc., M.B. Cloth. $3. Pp. 226, with 62 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1951.

The author of this book, an anatomist, describes in simple language the advances made during the last 50 years in the knowledge and understanding of reproduction, anatomy, and embryology. He describes, explains, and illustrates the events that take place when a child is conceived, carried in the uterus, and finally born. The data presented here are based on studies made by physicians, biologists, biochemists, physicists, pharmacologists, and more recently by workers with radioactive tracer elements. Such subjects as sex and reproduction, the reproductive organs, the control of the reproductive cycle, ovulation and fertilization, the early days in the life of the embryo, development and growth of the fetus, the mother and pregnancy, birth of the baby, and twins and multiple births are discussed.

Although the title of the book is "The Child Unborn," there is a short chapter devoted to the birth of the baby and half a chapter devoted to the child before and after birth. Both of these parts are excellent. In the stimulating chapter on practical problems, the author discusses sterility and fertility and the meaning of these words, predetermination of sex, planned parenthood, artificial insemination, early marriage, and the ideal number of children. At the end of the book there is a bibliography of well-known works dealing with reproductive anatomy and physiology, embryology, and antenatal and postnatal care. There are 62 clear and highly instructive illustrations. The paper is sturdy, and the type is clear. Lay persons will not only learn a great deal from this book but will also have many hours of pleasure.

The Will to Live. By Arnold A. Hutschnecker, M.D. Cloth. $3.50. Pp. 278. Thomas Y. Crowell Company, 432 Fourth Ave., New York 16, 1951.

The author, who has been in practice for 25 years, outlines his successful methods in combining the general practice of internal medicine with the newer theories and practical knowledge in the psychosomatic techniques of handling patients. The emotional components of the diseases discussed are related to and traced through the original theories of Freud concerning the life and death instincts. Discussion concerning the emotional components in, and the psychodynamics of, the phenomena of exhaustion seems particularly well presented. Case reports selected from the author's practice clearly portray the operation of the passive, or self-destructive instincts. This interesting book may be advantageously read by both the medical profession and the laity.

Statistical Methodology Reviews, 1941-1950. Edited by Oscar Krisen Buros, Director, Institute of Mental Measurements School of Education, Rutgers University, New Brunswick, N. J. Cloth. $7. Pp. 359. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1951.

This book is the third in a series intended to give ready reference to statistical methods described in current publications. It is restricted to reviews of books on statistical methods and does not include special scientific papers. It gives critical reviews of these books, reprinted from scientific journals. It is cross-indexed by author, journal, publisher, subject, and title. The book is written with the same care and accuracy that characterized the previous editions; it will be a useful tool for any research worker interested in modern statistical methods.

Industrial Health and Medical Programs. Selected and compiled by Margaret C. Klem, Margaret F: McKiever and Walter J. Lear, M.D. Federal Security Agency, Public Health Service, Division of Industrial Hygiene, Public Health Service publication no 15. Paper. $1. Pp. 397. Superintendent of Documents, Govern. Print. Off., Washington 25, D. C., 1950.

This publication contains reprinted material from a wide variety of sources, with particular emphasis on statistical representations of the labor force, kinds and sizes of industrial establishments, health status of the working population, plant health and medical services, professional personnel, and costs and extension of service in the form of general medical and hospital coverage. It is definitely not a manual of procedure, although the specific recommendations of official agencies regarding many aspects of industrial health services are included.

QUERIES AND MINOR NOTES

TETANUS TOXOID BOOSTERS

To the Editor:—*Is it advisable or necessary to give booster doses of tetanus toxoid to children at intervals of one year, and if not, what interval is advisable? At what age would you advise discontinuing booster doses? The older age group often show reactions of varying degrees, whereas the younger group show almost none. Do you advise using plain, fluid, or alum precipitated toxoid for such booster doses?*

John F. Simmons, M.D., Greenville, S. C.

This inquiry was referred to two authorities, whose respective replies follow.—Ed.

Answer.—The first booster injection of tetanus toxoid should be given one year after the primary immunization. Then a booster or recall injection may be given every three years through the grammar school period. Actually, this would not be necessary if every minor injury were known and received prompt attention. However, by means of periodic recall injections the titer of tetanus antitoxin is kept at a high level, affording protection at all times. Ordinarily, alum-precipitated or aluminum hydroxide adsorbed toxoid should be used for active immunization and recall injections. However, in the case of a known injury in a person who has had a primary immunization, some believe it is preferable to use fluid toxoid as a booster. This is because with more rapid absorption, it is contended, there is a quicker rise of the circulating tetanus antitoxin. For the armed forces and persons employed in hazardous occupations added protection is afforded by annual booster doses of tetanus toxoid.

Answer.—Because of marked variability in individual immunological response, it is difficult to be dogmatic concerning the exact interval between booster injections of tetanus toxoid. Studies in progress in various clinics indicate the desirability of repeated, minute, recall doses. If 1/10 cc. of purified alum-precipitated toxoid is injected subcutaneously yearly, an adequate level of immunity can be maintained as a protection against both clinical and subclinical traumas frequently conducive to infection with Clostridium tetani. The simplicity and relative harmlessness of this procedure would support its use in place of the irregular injection of tetanus toxoid under conditions of apparent injury. The available data would indicate that as many as five booster doses, in the amounts indicated, do not guarantee prolonged immunity.

These frequently repeated injections should be discontinued when the tendency to repeated injuries becomes less pronounced. This would be determined not only by age but also by the particular occupation and avocation of the person concerned. When the yearly recall doses are stopped, it would be desirable to maintain at least a two-year schedule, employing 1/20th to 1/10th cc. of refined-fluid or alum-precipitated tetanus toxoid, either alone or combined with correspondingly refined diphtheria toxoid.

The refined products, now commercially available, are to be preferred to those not prepared by the more modern techniques. Under these provisions, and with the employment of the small doses indicated, it is not particularly significant whether the fluid or alum-precipitated materials are used. Nevertheless, it is the opinion of some investigators that the fluid tetanus toxoid is preferable to the alum-precipitated variety as a recall injection following an injury likely to lead to contamination with spores of Cl. tetani. Under the following circumstances, the combined use of tetanus antitoxin (minimum of 5,000 to 10,000 units) and tetanus toxoid is indicated: delayed seroprophylaxis, extensive or multiple injuries, debilitated states (cachexia, malnutrition, and anemia), and acute blood loss. Tetanus anti does not interfere with the action of the toxoid in a previo actively immunized subject; whereas in the person not adequa inoculated with tetanus toxoid before, the antitoxin appare impedes the action of the toxoid.

It is not desirable to give booster injections of any antig during the poliomyelitis season. This routine is to be contin until a definitive statement is made concerning the alleged effects of local traumas in precipitating paralysis due to pol myelitis during poliomyelitis seasons.

KERATOCONUS

To the Editor:—*My son has the eye condition known as ke toconus. Please give me the details of this condition, e its prognosis and its treatment. Let me know about the u of contact lenses for the restoration of normal sight in t condition.*

A. Silva Navarro, M.D., Quebradillas, Puerto Rico.

Answer.—The cornea in keratoconus is irregularly curv so that it is more cone-shaped than spherical. There are all d grees of severity of the condition. In the milder forms vis may be nearly normal with an ordinary spectacle lens that co rects the marked astigmatism. In the severer cases, contact len may be required for maximal vision. In the severest types, th is ectasia of the cornea, which is markedly thinned and scarr and vision may not be improved, even with a contact lens.

There is no treatment that will reverse the condition. M therapy is directed toward correction of the refractive er caused by the differences in resolving power of the cornea its different meridians. In many cases, contact lenses impro vision to normal, since a symmetrical surface is substituted f the irregular cornea. In persons who do not tolerate cont lenses for a useful wearing period or whose vision is correct to less than 20/200 with contact lenses, corneal transplant recommended. Corneal transplant in keratoconus has a mu better prognosis than transplant for any other ocular conditio It is difficult to individualize for any patient with the conditio Frequently it progresses rapidly for a short time and then b comes stationary. In other patients, the condition may progre so far that there is rupture of the inner layers of the corne allowing fluid to enter the corneal stroma itself.

MANAGEMENT OF HABITUAL ABORTER

To the Editor:—*A white woman, 37, is a habitual abort (gravida 3, para 0). She is now eight and one-half mon pregnant and has been taking up to 125 mg. daily of diethy stilbestrol, and progesterone and estrogens intramuscula twice a week. Clinically, her pelvis is of adequate size; b x-ray (pelvoencephalograms) a normal female pelvis is re ported, with the proportion of fetal head to pelvis excellen for delivery from below. In view of age and abortions wou this patient be a candidate for cesarean section?*

M.D., Louisiana.

Answer.—The three previous abortions and the patient's a need not be deterring factors to a successful delivery throu the birth canal. They should, however, put the physician guard to do everything possible to obtain a living baby. T patient should be allowed to go into labor spontaneously. If head engages easily, the labor mechanism is normal, and g progress is made, an uneventful outcome can be expected. the other hand, if, at the end of 12 or 15 hours the senting part remains high and unengaged, if the ute motility is poorly coordinated and progress is very slow and cervix fails to efface and dilate satisfactorily, a cesarean sec can be done.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PREGNANCY FOLLOWING PNEUMONECTOMY

To THE EDITOR:—*A woman aged 33 had a total pneumonectomy and extensive thoracoplasty about three years ago for unilateral pulmonary tuberculosis. Since that time there has been no indication of constitutional activity of the disease or involvement in the remaining lung. Her present vital capacity is about 65% of normal. She is able to do ordinary housework without difficulty. She is extremely anxious to become pregnant. Is any information available that would allow me to estimate the risk she would obviously be taking?*

N. J. Roberts, M.D., Orange, N. J.

This inquiry was referred to two authorities, whose respective eplies follow.—ED.

ANSWER.—There is no good reason why this patient should ot become pregnant. Since she is free from any evidence of ctive tuberculosis and since her vital capacity is about 65% of ormal, she should go through a normal pregnancy without any ifficulty. The fact that she is able to do her ordinary housework ithout difficulty is very important in evaluating her ability to go rough pregnancy and labor. Many women have had children ccessfully after the removal of a lung.

If it should be desired to be somewhat more certain about e risk of pregnancy and labor, functional studies could be ade of the remaining lung in order to determine the percentage f oxygen saturation of her blood under normal conditions and nder strain, such as exercise on a treadmill. Also studies could e made on her alveolar oxygen. There are only a few thoracic rgical centers in the country that are equipped to evaluate e patient completely from such a standpoint. In this case, it ould seem to be unnecessary, because the patient's ability to o her housework is a fairly good indication that she is oxygenting her blood satisfactorily with her remaining lung.

ANSWER.—Clinical experience with women who have had a omplete pneumonectomy is limited. Extensive thoracoplasty nd bilateral collapse therapy have not proved to be serious hazrds to the pregnant patient. Most women encounter little diffiutly during gestation. In one patient who had a pneumonectomy or tuberculosis and in a second who had the whole of one lung nd one lobe of the other removed because of bronchiectasis, regnancy was uneventful, except for some dyspnea in the latter onths. If this patient is anxious to have a family, and the uberculosis is entirely quiescent, the hazard of a pregnancy need ot be great. It is difficult to estimate the risk, but this can be educed to a minimum by careful medical management.

SPHENOPALATINE GANGLION NEURALGIA

To THE EDITOR:—*A married woman has what several ear, nose, and throat specialists think is a left sphenopalatine ganglion neuralgia, because injecting the left ganglion with cocaine affords relief from the typical left-sided headache. When the applicator first touches the left ganglion, the typical headache either is precipitated or, if already present, is greatly aggravated. This patient has been examined thoroughly by otolaryngologists, ophthalmologists, gynecologists, internists, and neurologists and has had all the laboratory work indicated, with no relief. She is almost an invalid because of severe headaches, which have been occurring almost daily for three years. Please outline the latest treatment for sphenopalatine ganglion neuralgia and the hazards or complications of such therapy.*

M.D., California.

ANSWER.—It would be easier to answer this question if there vere unanimity of opinion on the existence of the clinical entity of sphenopalatine ganglion neuralgia. There are many who beieve that disease of the ganglion cannot cause the complaints ssigned to it and base their beliefs on the findings of microscopic embryological and neurological studies. It is thought by some observers that tracts subserving certain areas in the head do not make a stop in the ganglion but that they merely pass hrough it and are hence no part of it. Such evidence was not vailable when the concept of sphenopalatine ganglion disorders first arose; the evidence at that time was based largely on gross natomical studies. Further evidence of loss of confidence and vaning interest in this clinical entity is the decrease in the number of articles appearing on the subject in the various otolaryngology journals. From 1936 to 1947 not a single reference to this topic appeared in the *Archives of Otolaryngology*. A change in concept is evidenced by the rather general acceptance of William's thesis that the neurological and sympathetic phenomena formerly ascribed to sphenopalatine ganglion neuralgia can now be regarded as manifestations of physical allergy.

As for the relief that follows intranasal cocaine anesthetization of the ganglion region, there are some who feel that this may be a *post hoc propter hoc* situation, aided by the euphoria which cocaine may give and which is not altogether safe. As to alcohol injection of the ganglion, some observers have not noticed the good results claimed for this method and have seen considerable discomfort following this intervention, which is not lacking in danger.

Until there is more definite opinion, then, on the whole topic, and since the conventional treatment described above has not, in the hands of many competent observers, yielded the expected results, it may be worth while in the instances above to start all over again, ruling out, if possible, such things as vascular headaches, headaches originating from suppurative sphenoiditis and from intracranial pathology, and psychogenic disorders.

SYMPTOMS FROM TEETHING

To THE EDITOR:—*During the eruption of the first teeth in a child, every imaginable symptom that the infant may show is widely blamed on "teething." The dentists of my acquaintance can produce no good evidence of any relationship between these manifold symptoms and normal dentition or any valid reasons why there should be such varied symptoms. 1. Is normal dentition known to produce symptoms such as cough, fever, and diarrhea? 2. Are there pathologic reasons for such an interconnection? 3. Is there definite evidence of a scientific nature for this theory, or is it merely time-sanctioned "empiric" belief?*

M.D., Pennsylvania.

This inquiry was referred to two authorities, whose respective replies follow.—ED.

ANSWER.—The eruption of the primary teeth into the oral cavity is a physiologic process, and the eruptive process has often been blamed for a number of disturbances that happen to occur at the same time. There is no conclusive evidence of their interconnection. In fact, when both eruption and fever are concomitant, it is possible that the fever stimulated the eruption. A short discussion of this problem is given on page 773 in Nelson's "Mitchell-Nelson Textbook of Pediatrics" (Ed. 2, Philadelphia, W. B. Saunders Company, 1950).

ANSWER.—It is generally agreed that normal dentition does not produce such symptoms as 1. cough, fever, and diarrhea. 2. There is no known pathologic reason for such interconnection. 3. Blaming the rash, cough, diarrhea, and fever on teething probably is a time-sanctioned empiric belief.

OVULATION IN MAN AND LOWER ANIMALS

To THE EDITOR:—*What reasons are offered for the differences between the ovulatory-menstrual-fertile period in human and lower forms of animal life? Specifically, why in the dog is the period of impregnation most likely just after the stoppage of menstrual blood flow and in women midway between menstrual periods? Also, is there any agreement regarding the level of libido during the fertile period versus the period of menstruation in women?*

Earl Parsons, M.D., Little Rock, Ark.

ANSWER.—There are no great differences in ovulation between the human and other animals in general. Menstruation in the human is commonly confused with heat (flow of blood) in lower animals. Some animals, including humans, ovulate in a fairly regular cycle, while others, like the rabbit, may ovulate at copulation. Some women spot or have a show of blood at ovulation.

The question of libido in the human is so confused by psychogenic factors that it is difficult to evaluate, but many do believe libido is accentuated during ovulation. In animals it is often the only time the female will accept the male.

URINARY TRACT INVOLVEMENT IN SPINA BIFIDA

TO THE EDITOR:—*A boy, aged 11, with spina bifida of the lumbar spine is paralyzed from the hips down. At first he had partial control of the bladder and bowels to the extent that he voided at intervals and did not soil. In the past four months he has lost all bladder control and dribbles continuously, especially if standing. The bowel function is all right if he is kept constipated. There is pyuria most of the time. He has had no surgery except for a straightening of the left foot, so that he could wear a shoe and braces. He can walk with the braces by supporting himself on furniture but has not learned to use crutches yet. He is normal mentally and doing fifth grade work. What is the prognosis in a case of this type as to further renal involvement or failure? Is there any device to be worn for the incontinence other than the Cunningham incontinence clamp? Would any further surgery be advisable in this case? There is no sac present but merely a pedicle about 3 by 5 cm. and elevated about 2 cm.* *M.D., Minnesota.*

ANSWER.—In order to determine the exact condition of the urinary tract, it would be essential to determine whether urine is retained in the bladder and to have plain films, as well as urograms, made of the entire urinary tract. It would also be advisable to make cystoscopic examination to determine the condition of the bladder neck. Incontinence in cases of spina bifida may result from overflow, with urinary retention, or from weakness in the musculature at the bladder neck. Such retention may be caused by a spastic condition with hypertrophy and cicatricial changes in the bladder musculature. If this is the case, transurethral resection may be of value. In offering a prognosis, it would of course be necessary to have an estimate of renal function as well as the extent of renal and ureteral pathology as visualized in the urograms. Absence of residual urine would indicate paralysis of the musculature involved in urinary control, a condition not amenable to local surgery. In regard to the spina bifida itself, the spinal cord may be involved in cicatricial changes caused by the deformity, and surgical repair occasionally may benefit innervation of tissues involved.

RECURRENT CONDYLOMATA ACUMINATA

TO THE EDITOR:—*A woman, 40 years of age, had condylomata acuminata of the vulva and anus three times within a year. I removed the condylomas by electrodesiccation and curettage. Podophyllin was not applied because of the extensive area around the anus involved by the condylomas and because of fear of possible long-lasting irritation. There is no discharge from rectum or vagina and no evidence of trichomonads or gonococci. The male partner allegedly has no warts or condylomas. What is the explanation for the recurrence of the condylomas?*

Paul C. Rost, M.D., Los Angeles, Calif.

ANSWER.—Condyloma acuminatum is caused by a filtrable virus and accordingly is infectious and autoinoculable. Many experts have had experiences similar to that of the inquirer, in that recurrences following treatment are common. These recurrences may be due to (1) having overlooked some new small lesions at the time of the destructive treatment, (2) dissemination from the treated lesion, or (3) reinfection from the original source such as bowel or vagina. For these reasons, prophylactic measures for prevention of recurrences should be instituted at the time the lesions are destroyed, whether by cautery, electrodesiccation, or a chemical cauterant. The oral use of aureomycin or terramycin may be of value in this regard, and the use of idal soap on the genitalia also has some merit. A dusting containing equal parts of thymol iodide, bismuth, and ld be applied twice daily to the anogenital area after with soap. X-ray therapy following removal of the some advocates, who believe that small lesions may stroyed. Cleanliness is essential in preventing recur- d a search for the source of the infection in the vagina or in the spouse should be made. In spite of such there will be recurrences, so that it is necessary to see ly and destroy the new lesions while they are

INTERMITTENT VENOSPASM

TO THE EDITOR:—*A patient presents the unusual complai intermittent engorgement of the large superficial veins of arms and legs accompanied by severe pain. The symp resemble those reported in Michael Smith's case in* THE JO NAL (**134**:924 [July 5] 1947). *My patient gives a history severe abdominal pain that has led to two laparotomies one for a suspected cholecystitis and another for question pancreatic disease. In both instances exploration revealed n mal structures. F. Parkes Weber, in "Further Rare Disease briefly suggests that large veins may become spastic and ca symptoms. In speaking of visceral symptoms he uses the te "haemangiospastic," so that one does not know whether thinks that venospasm may be the etiologic factor. His s reference is presumably to a paper concerning symmetri necrosis of the renal cortex, and this would be due to arte spasm. Has anyone ever described intermittent venospasm (clusive of post-traumatic spasm) similar in nature to Raynau disease of arteries?* *Mayer Hyman, M.D., Tucson, Ari*

ANSWER.—The data given are insufficient to permit one say whether or not the condition described should be con ered intermittent venospasm. Additional information might obtained by (1) determining venous pressure in one of the gorged veins during an attack and in the interim between atta and (2) by noting whether the gross appearance of and press within one of the engorged veins would change during an att on administration of an autonomic blocking agent or use some other method for blocking sympathetic impulses.

Veins are well supplied with autonomic nerves, and v spasm is recognized as occurring normally in response to m types of chemical and physical stimuli. Pure venospasm una ciated with arterial spasm and sufficiently severe to cause sy toms has rarely been described. In his "Monograph on Ve (Springfield, Ill., Charles C Thomas, 1937) Franklin briefly views the subject and discusses the early case reports by Ma ner (1864) and Weiss (1822). de Sousa Pereira recently revie the problem of the innervation of the veins and its role in p venospasm, and collateral circulation (*Surgery* **19**:731, 19 Humble and Belyavin have reported experiences in which observed venospasm severe enough to interfere with the tr fusion of blood (*Lancet* **2**:534, 1944). Naide and Sayen presented evidence that venospasm is an important factor in attacks of Raynaud's disease (*Arch. Int. Med.* **77**:6, 1946). suspected case of intermittent venospasm deserves the most ful study before one assumes that the symptoms and signs ent are the result of such spasm.

ALEXIA AND DYSLEXIA

TO THE EDITOR:—*I have a patient with developmental al 1. What tests are necessary for a thorough investigatio this condition? 2. What treatment is considered most cacious? 3. How frequently should this method of reedu tion be used? 4. Would a severe attack of pertussis at age of 3 months have any causal relation to this type of bility? The patient is a boy of 8 years in good general he with the exception of seasonal bronchial asthma. He is ticularly susceptible to dust and spring grasses.*

William P. Clark, M.D., Mount Vernon, N.

ANSWER.—The information given about this patient is in quate, but it is presumed that the "developmental alexia" appeared recently, perhaps after he entered school. Before accepts the diagnosis as alexia, which presupposes an or basis for the difficulty, all other avenues should be investi thoroughly to rule out possible functional disorders. Dys (reading difficulty) has been described under various no clatures. This has led to misunderstanding of the problem Dyslexia, alexia, dysphasia, aphasia, and strephosymboli used synonymously, wrongly conveying the idea that the identical conditions.

Dyslexia is a syndrome characterized by inability to properly despite normal or superior intelligence. The abn causative factors are functional, preventable, and correc in contradistinction to alexia.

Examination and investigation of the child and his problem every point of view must be made, with a complete history every aspect: physical and mental examination, including ctual and emotional appraisals; social investigations; and tional achievements, including special abilities or disabilites abits at work and at play.

The method of treatment would consequently depend on iagnosis. Usually the problem is complex and requires nce from various fields of science: medicine, psychology, ducation. Should the causative factors be functional, the ients can be administered according to the ingenuity of involved in the case. If the difficulty is due to an organic , then a highly specialized teacher in that particular field ential.

The child should be allowed to continue in his regular l program. The period required for recovery from dyslexia iable, and it depends on many things, particularly on the ment and cooperation of parents and the physical status patient. Sometimes weekly counseling and treatments are ent. Recovery from alexia requires prolonged treatments. The medical literature of the last 10 years contains no re- l evidence of causal relationship between pertussis and , or dyslexia.

RGY TO ALFALFA SEED

IE EDITOR:—*Please comment on a symptom in a patient had taken alfalfa seed tea (1½ tablespoons of seed in r cups of water boiled 15 minutes and taken three cups y) for rheumatism? She said the arthritis pains were greatly roved after 3 weeks. Then, suddenly, swollen glands de- ped, then a rash, which seemed to subside when tea was ontinued. Later, the patient tried the tea again, and worse ptoms developed. Is this just an allergic reaction? Have a record of others having allergic symptoms on taking concoction?* *C. J. Leavy, M.D., Freeport, Ill.*

SWER.—Alfalfa is related to the bean family. Hence it is le that anyone who is allergic to beans might be allergic alfa seed. It is possible that the rash was allergic; however, is no certainty of it. It may be that an exhaustive search literature might disclose a case or two of alfalfa sensi- , but it is certainly not recognized as an entity distinct from types of allergy.

ESSES UNDER THE NAILS

IE EDITOR:—*A boy, age 3½ years, has had generalized in- tile eczema since he was 6 months old. An allergist sus- ted hypothyroidism and prescribed small doses of thyroid. e father states that abscesses develop under the boy's nails ry time thyroid is administered. These abscesses subside mptly on cessation of the medication. Is this a known sign thyroid toxicity?*

Mauro Rosenberg, M.D., Sherman Oaks, Calif.

is inquiry was referred to two consultants, whose respective s follow.—ED.

SWER.—Such a complication is not mentioned in any of andard works on thyroid disease. It might be well to verify ather's statement.

SWER.—The administration of desiccated thyroid as far own, has not been associated with the development of in- ns under the nails. Mild or latent diabetes may become e when desiccated thyroid is administered, and it might ll to check the patient carefully for the presence of diabetes.

IID WEATHER AND ACNE

HE EDITOR:—*Does humid weather affect the incidence of e?* *Robert L. McKenna, M.D., New York.*

SWER.—It has long been observed that humid weather has lverse effect on acne. A paper by Wiley M. Sams (Humidity: ion to Problems in Dermatology, *South. M. J.* **44**:140 [Feb.]) covers the subject fully and contains some 15 pertinent ences.

HEADACHE FROM SACCHARIN

TO THE EDITOR:—*A patient, aged 42, has had persistent occipital headaches on awaking in the morning. Physical examination revealed no abnormality. When he discontinued taking 1 grain (60 mg.) of saccharin tablets in his coffee he stopped having headaches. He estimates he took five of the 1 grain tablets per day over a period of two years. Is saccharin ever a causal factor in the production of headaches?*

E. H. Meisel, M.D., Midland, Mich.

ANSWER.—No instances of headache following the use of saccharin are recalled in a wide experience with many diabetics who used this substance over many years. In the days before the use of insulin, an occasional patient would use 12 to 24 saccharin tablets in 24 hours, but no untoward symptoms resulted. It is unusual that this patient used 1 grain (60 mg.) tablets, since a ¼ grain (15 mg.) tablet is equivalent to 1 teaspoon of sugar.

(The possibility of idiosyncrasy must still be considered in this patient.—ED.)

PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

TO THE EDITOR:—*A woman who has had one child has two brothers suffering from pseudohypertrophic muscular dystrophy. She asks about the possibility of her child or further children having this disease. Please inform me as to the hereditary pattern of the muscular dystrophies.*

Charles S. McCulloch, M.D., Chico, Calif.

ANSWER.—Pseudohypertrophic muscular dystrophy is an inherited familial disease, the inheritance of which is, however, so variable in different families as to render any definite answer to the question impossible. According to recent studies [Tyler, F. H., and Stephens, F. E.: *Ann. Int. Med.* **35**:169 [July] 1951) progressive muscular dystrophy of childhood appears to be a sex-linked, recessive characteristic transmitted predominantly by the female and chiefly to male offspring. The proportion between males and females is probably at least 5 or 6 to 1. However, many sporadic cases are dependent on mutations without evident inheritance.

The sex of the questioner's child is not stated; a male is much more likely to have dystrophy than a female. This holds true for any other children that may be born. In any case, inheritance of the disease is by no means certain. If the parents are willing, it would be much safer to enlarge the family by adoption.

ANASTOMOSIS OF SEVERED VASA DEFERENTIA

TO THE EDITOR:—*A man, aged 32, had a vasectomy in 1946. He remarried in 1949, and had the severed vasa anastomosed. The sperm count has steadily risen to 80 million per cubic centimeter, but all sperm are dead. What is the prognosis for live sperm appearing? The man was previously fertile, having had four children by his first wife. The urologist can find no abnormalities.*

M.D., California.

ANSWER.—A sperm count of 80,000,000 per cubic centimeter following surgical anastomosis of the severed vasa would indicate that the operation was successful. Occlusion of the vasa during a period of three years could be a factor in causing necrospermia. There may be, however, some other factor present to explain it. Further data, including testicular biopsy, are necessary in order to determine the prognosis. If immature sperms are found in the testicular tubules, the prognosis might be more favorable. Diethylstilbestrol may be of help in such cases. Repeated sperm counts should be made, with proper precautions in securing fresh specimens. If necrospermia and low counts persist, the outlook is not good.

THYROID AND SEDIMENTATION RATE

TO THE EDITOR:—*Will the taking of thyroid tablets over a period of months elevate the sedimentation rate of the blood?*

Paul Russell, M.D., Inglewood, Calif.

ANSWER.—There is not much information on the effect of thyroid tablets on the sedimentation rate. The data available indicate that there is no effect in physiologic doses.

MENSTRUATION AT THE MENOPAUSAL AGE

TO THE EDITOR:—*In the Sept. 22, 1951 issue of* THE JOURNAL, *page 360, was a query on "Menstruation at the Menopausal Age." The answer states in part, "Generally, surgical treatment is neither required nor satisfactory for frequent or heavy menstrual periods near the menopause. In most women the bleeding ceases completely without the necessity for surgical therapy. Of course, if there is any bleeding between the periods, cancer must be ruled out by curettage and cervical biopsy."*

May I refer you to an article entitled "A Decalogue for Early Diagnosis of Pelvic Cancer," by John Y. Howson and Leib J. Golub, in the Pennsylvania Medical Journal (**53:**696 [July] 1950), *which states, "Assume menopausal cycles to be normal only when the amount of bleeding and the frequency of occurrence of the periods decrease or remain constant. Any variations from this, or any post menopausal bleeding requires a diagnostic dilatation and curettage and biopsy of the cervix."*

It is conceded by all gynecologists that metrorrhagia is an abnormal symptom requiring further studies, including dilatation and curettage and biopsy of the cervix to rule out cancer of the genital tract; however, menorrhagia and frequent menstrual periods are occasionally regarded as harmless symptoms. They are, however, definitely abnormal symptoms and frequently the first symptom noted in cases of fundal, cervical, and occasionally ovarian carcinoma.

Of 1,580 cases of pelvic cancer studied by the Philadelphia Pelvic Cancer Committee, menorrhagia was a prominent symptom in 99 patients, or 6.2%. In reviewing 22 case records of the Philadelphia Pelvic Cancer Committee of cancer of the fundus of the uterus in which menorrhagia was the first symptom of which the patient complained, I found seven cases of uterine fibroid, four with sarcomatous degeneration and three with adenocarcinoma. In our ovarian group of 210 cases, menorrhagia was the primary symptom of eight patients, or 3.8%, and was associated with other symptoms in three patients, a total of 5.2%.

It seems imperative, therefore, that any patient with menorrhagia should have a diagnostic dilatation and curettage and exploration of the cervix to rule out early pelvic cancer prior to administration of therapy.

Leib J. Golub, M.D.
422 Medical Arts Bldg., Philadelphia 2.

ENTERITIS IN TOURISTS

TO THE EDITOR:—*The recent replies in* THE JOURNAL *(Sept. 22, 1951, page 358) concerning the enteritis of tourists in Mexico does not cover the whole situation. I have been there a number of times and have suffered from the complaint just as many times. It is most certainly caused in many persons by the peppers and tomatoes. When this food is not taken, there is no trouble. Liberal doses of bismuth constitute the best treatment.*

L. Pellman Glover, M.D.
1200 Fourteenth Ave.
Altoona, Pa.

TO THE EDITOR:—*In* THE JOURNAL *(Sept. 22, 1951, page 358) in Queries and Minor Notes the replies to the question about enteritis in American tourists in Mexico did not mention one, and possibly the most important, factor. The condition is puzzling in many respects. It is true that one cause is staphylococcic contamination of food. Fortunately, only a fraction of cases are due to a bacillary infection, amebiasis, or to infection with Salmonella and other members of the paratyphoid group.*

An important cause for the harmless but often disabling diarrhea is the use of varied oils in the preparation of the food, which has the cathartic effect of castor oil in many Americans. In addition, certain Mexican dishes contain herbs which act as a laxative. For the same reason, some American tourists experience similar difficulties in traveling in Latin countries of Europe. A tourist in Italy, who has been plagued by this inconvenience, on entering France will suddenly be cured, because the food in France is mainly prepared with butter instead of oil. If the susceptible tourist should then continue into Spain, the diarrhea will promptly return. He m leave France in the evening, eat dinner on the train, and w he arrives the next morning in Madrid will have to m repeated dashes to the bathroom. On the other hand, native traveler, who ate the same meal, has no dis digestion.

With the increasing number of Americans traveling Mexico and other Latin countries the diarrhea problem b become important. I have attended fellow travelers who w so ill that they felt the end was near. After they recove they immediately left the country, never to return. I re the incidence of two American college girls who beca severely ill with this condition in one of the best hotels Florence, Italy. Being in a foreign country and not speak the language, they developed a panic reaction and called th parents over the transatlantic telephone. The parents in th anxiety consulted the family physician, who, not knowing w it was all about, merely added to the confusion.

Walter L. Bruetsch, M.D
3000 W. Washington St.
Indianapolis, 22.

DILATATION OF PUPIL

TO THE EDITOR:—*The query in* THE JOURNAL *March 3, 1 page 688, stated the precautions that should be taken by general practitioner in the dilatation of the pupil for fu examination.*

Any mydriatic may precipitate an attack of glaucom one who is predisposed to this disease, particularly in pati over the age of 35. For dilatation of the pupil for fundus amination, nothing in my experience excels the use specially prepared ophthalmic tablet of eucatropine (euph mine®) hydrochloride, 1.5 mg. This product is a man ester related to eucaine and, when applied to the conjunc causes a prompt mydriasis, with little paralysis of accomm tion and rarely an increase of intraocular pressure or co irritation. In 20 minutes, it causes a very effective dilatatic the pupil, which passes off entirely in two to four hours. preparation of eucatropine hydrochloride is available i form of 10 very small round compressed white disks, in a tube, which are easy to carry and convenient to use. placed in the eye they dissolve rapidly.

I use a small Davill lens eye spoon, and place one di the conjunctival sac at the outer canthus. The patient keeps the eyes closed and holds a small piece of moist c firmly over the inner canthus for three minutes, whil disk dissolves; this keeps the solution from running dov the nose. After the dilatation of the pupil, one or two of a miotic, such as 1% pilocarpine hydrochloride sol or 0.25% physostigmine salicylate solution, must alwa instilled. A piece of moist cotton must be held firmly ove inner canthus, with the eyes closed for three minutes. patient should not be allowed to leave the office unti pupils are contracted once more and the finger tension is mal. I have been using this product for 28 years, without lications and with much convenience and comfort to pat

Carl Hobart, M.D
3601a Gravois A
St. Louis.

TREATMENT OF BURSITIS

TO THE EDITOR:—*In* THE JOURNAL, *August 25, page 16 question was asked concerning the value of diathermy, therapy, and procaine hydrochloride injections into the in cases of acute calcific bursitis. The answer discusse caine injections at length and casually mentioned the " x-rays after procaine injections and fenestration of the b Radiologists and referring physicians have observed ex results in virtually all cases of acute calcific bursitis, p larly when no previous treatment, such as procaine inje has been employed. Failure to give proper credit to a dure that is undoubtedly the procedure of choice in th dition is misleading to the many physicians who ha proper answer to Dr. Archer's question.*

William A. Henkin, M.D.
Receiving Hospital of the City of Det

THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 3
CHICAGO, ILLINOIS
JANUARY 19, 1952

COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION

ANTIBACTERIAL MANAGEMENT OF URINARY TRACT INFECTIONS

Paul S. Rhoads, M.D., Carl E. Billings, M.D.
and
Vincent J. O'Conor, M.D., Chicago

In a study not yet completed, our data at present indicate that at least 20% of all patients coming to autopsy at Wesley Memorial Hospital had gross or microscopic evidence of active or healed pyelonephritis. The condition was diagnosed ante mortem in only 6% of the cases. These figures are in agreement with those of other workers.[1] Such findings, together with our frequent inability permanently to control urinary tract infections, led to the present study, which is a critical evaluation of the problems in our own cases of the past 18 months.

Current medical literature abounds with enthusiastic reports of the efficacy of the antibiotics, sulfonamides, and sulfonamide mixtures in urinary tract infections. Immediate results with these new agents have prompted us to share this enthusiasm, but a careful review of our long-term observation has shown that favorable effects often are only temporary.

All patients on our own services who had cultures of catheterized urine because of known or suspected urinary tract infection were studied. The majority of these patients whose infection did not clear up quickly—as demonstrated by routine examination and culture of catheterized urine and the other usual clinical criteria—were studied by roentgenograms and cystoscopy. The infections are classified roughly into various groups as accurately as our data would permit (Table 1). Probably in a high percentage of those listed as primarily infections of the lower urinary tract there was considerable involvement of the kidneys and ureters also.

It is well recognized by urologists that regardless of the care with which an antibacterial agent is chosen, and the persistence with which it is used, urinary tract infections will not clear up unless obstructive lesions are corrected and infecting foci such as urethritis, vaginal infections, prostatitis, and infections of the gastrointestinal tract are eliminated. It will be seen that the large majority of these patients—at least 75%—had urinary tract obstructions or infectious foci of one type or another.

Table 2 reveals that a total of 332 various micro-organisms were cultured from the 325 patients studied. In 24 instances the patients had pyuria and other symptoms of the type usually associated with urinary tract infections, but cultures were sterile before treatment was instituted. In 63 instances two or more different bacteria were present in the original culture before therapy was begun. Often when one was eliminated by treatment the other remained. In 74 instances the single micro-organism present on pretreatment cultures was eliminated by treatment, but a different organism appeared on cultures taken after the first course of therapy. In 26 instances Escherichia coli was eliminated by appropriate therapy, but Streptococcus faecalis was present in pure culture after treatment. In 16 instances the order was reversed.

CHOICE AND DOSAGE OF ANTIBACTERIAL THERAPY IN PRESENT STUDY

Since the object of the present study was to get some comparison of results with the different antimicrobial agents commonly used for urinary tract infections, no selection of particular remedies was made other than that the agent used should have been expected from current information to be effective against the bacterium in question and that its use should be practicable. The latter consideration is important. Some of the antibiotics may not be practicable because they cannot safely be given parenterally. Since in their present form bacitracin, aerosporin,® polymyxin, and neomycin often produce parenchymal kidney damage, they were excluded from the

---

Doris M. Adair provided technical assistance.

From the Department of Medicine, and the Department of Urology, Wesley Memorial Hospital, and Northwestern University Medical School.

Read before the Section on Internal Medicine at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

[1] Weiss, S., and Parker, F., Jr.: Pyelonephritis: Its Relation to Vascular Lesions and to Arterial Hypertension, Medicine 18: 221 (Sept.) 1939. Mansfield, J. S.; Mallory, G. K., and Ellis, L. B.: The Differential Diagnosis of Bright's Disease: Clinicopathological Correlation, New England J. Med. 229: 387 (Sept. 2) 1943.

present study. Another important consideration is the cost of the orally administered antibiotics. This completely precludes their use in adequate dosage by many patients and prompts the physician to prescribe them always in minimum dosage. Penicillin was used only in hospitalized patients and usually in those undergoing surgery. It was never given orally. Likewise, streptomycin was given only to hospitalized patients, in some instances not because it was considered the agent of choice but because of the inability of the patient to take anything by mouth. The adult dosage range considered by us to be acceptable for forming opinions as to the efficacy of treatment is listed in Table 3. All of the patients listed in this study were treated within the dosage ranges indicated. With very few exceptions the daily dose of all oral preparations was divided into four equal parts given at six-hour intervals day and night. Penicillin and streptomycin were usually given at 12-hour intervals. Many patients were given smaller doses, with good symptomatic relief, but the results are not included in the tables. In a few instances the drugs—especially penicillin and streptomycin—were given over periods of three to four weeks.

TABLE 1.—*Location and Classification of Urinary Tract Infections*

Upper Urinary Tract Infections	Cases	Lower Urinary Tract Infections	Cases
Pyelitis with renal or ureteral calculus	32	Cystitis, anatomic etiology not determined	58
Pyelitis with hydronephrosis—obstruction at ureteropelvic junction	21	Cystitis associated with benign hypertrophy of prostate	42
Pyelitis with hydronephrosis due to nephroptosis	15	Cystitis associated with cystourethrocele	19
Pyelitis with tumor in kidney or bladder obstructing ureter	9	Cystitis associated with urethral stricture or urethritis	35
Pyelitis with double kidney and ureter	5	Cystitis with *cord lesions and* indwelling catheter	17
Pyelitis with ureteral stricture	5	Cystitis with carcinoma of bladder or prostate, or papilloma of bladder	17
Pyelitis of pregnancy	1	Cystitis associated with acute prostatitis	4
Pyelitis with no roentgenographic evidence of obstruction	25	*Hemorrhagic cystitis, etiology* not determined	4
rculous pyelitis with secary invaders	9	*Interstitial cystitis and elusive* ulcer	7
Totals	122		203

Results of therapy in the same patients appear in two or sometimes three of the groups listed according to causative organism, because, as the culture results shifted after therapy, a new therapeutic attack was begun on the new organisms encountered. Sometimes they appear more than once in the same group, because when one therapeutic agent failed a second was used, and each trial is recorded separately.

It will be noted that 3,4-dimethyl-5-sulfanilamidoisoxazole (gantrisin®) was used more often than other sulfonamides, because previous studies [2] had shown it to have about the same range of bacteriostatic activity as sulfadiazine, and studies since indicated that its in vitro bacteriostatic effects were roughly comparable again t those of sulfadiazine and two of the commonly use sulfa mixtures.[3] More important, its solubility in pH ranges of 4.5 to 6 is considerably greater than that o sulfadiazine [4] and slightly greater than the solubility o the sulfa mixtures which we tested [5] (Table 4). Thus, i appears to be the sulfonamide of choice in most urinar tract infections.

TABLE 2.—*Distribution of Micro-organisms in Urinary Tract Infections in 325 Patients**

	Esch. Coli	Str. Faecalis	Ps. Aeruginosa	Staph. Albus and Aureus	B. Proteus	A. Aerogenes	M. Tuberculosis	K. Pneumoniae	M. Tetragenus	Str. Hemolyticus	B. Subtilis	[illegible]
Upper urinary tract	49	19	25	11	4	3	5	2	1	1	1	1
Lower urinary tract	102	50	21	11	10	8	0	3	4	1	1	2
	151	69	46	22	14	11	5	5	5	2	2	3

* Evidence of infection, no micro-organisms on original culture: 2
Multiple micro-organisms in original cultures: 63
Change in bacterial flora of urine of patients under treatment: 7

Methenamine mandelate (mandelamine®) and cal cium mandelate were used chiefly in the early phases o this study. For most urinary tract infections they are les effective than sulfonamides and antibiotics. For milde colon Bacillus and Str. faecalis infections, in which rea tions or expense make the other drugs impracticable, the have a field of usefulness.

Simultaneous administration of two or more agen was carried out almost exclusively in hospitalized pa tients. The scatter in the various combinations used i this study is too great to permit conclusions regardin any of them. Considering the large number of multip infections and the very frequent elimination of o micro-organism with the emergence of another und therapy, intensive study of the possibilities in this mo of attack seem clearly needed.

TABLE 3.—*Dosage of Various Antibacterial Agents Used*

	Range (Daily)	Average	Duration of Therapy (Minimal), Days	Aver age, Day
Gantrisin®	4-9 gm.	6 gm.	5	10
Sulfadiazine	4-6 gm.	......	5	10
Combined sulfonamides	4-6 gm.	4 gm.	5	10
Mandelamine®	6-8 gm.	......	8	10
Calcium mandelate	6-8 gm.	......	8	10
Penicillin	400,000 to 1,200,000 U.	600,000 U.	5	10
Streptomycin	1-2 gm.	1.5 gm.	5	10
Chloramphenicol	1.5-3 gm.	2 gm.	5	7
Aureomycin	1.5-3 gm.	2 gm.	5	7
Terramycin	1.5-3 gm.	2 gm.	5	7

RESULTS

There was no case of acute pyelitis in which there w not quick improvement—subjectively and objectively by the use of antibacterial agents, but in no instance w the infection regarded as controlled unless one or mo cultures taken 48 hours to three weeks after complet of therapy gave no growth, and there was no reappe ance of clinical symptoms. Often these observatio extended over many months.

---

[2] Schweinburg, B., and Rutenburg, A. M.: NU 445 in Treatment of Infections Due to Gram Negative Bacilli, Proc. Soc. Exper. Biol. & Med. **71**: 20 (May) 1949. Rhoads, P. S.; Svec, F. A., and Rohr, J. H.: Clinical Evaluation of a New Sulfonamide—Gantrisin, Quart. Bull. Northwestern Univ. M. School **23**: 104, 1949.

[3] These results will be summarized in another communication.

[4] Svec, F. A.; Rhoads, P. S., and Rohr, J. H.: A New Sulfonamide (Gantrisin): Studies on Solubility, Absorption and Excretion, Arch. Int. Med. **85**: 83 (Jan.) 1950.

[5] The Bratton Marshall method of sulfonamide determination was employed, using the same batch of normal urine (adjusted to the various pH levels) as the solvent in each determination.

The same criteria were used for the more chronic nfections. In Table 5 our estimates of the clinical results obtained in the series with recultures after treatment s given. As might be expected, the therapeutic results were much better in the "lower urinary tract infections" han in those in which pyelonephritis was demonstrated. It will be noted that a high percentage (47.5%) of paients having cystitis with no important obstruction to he outflow of urine made a permanent recovery. Conversely only 9 (7.6%) of 119 patients with evidence of urinary tract obstruction appear to have been completely cured of infection. In these nine patients cultures became sterile only after removal of the obstructing lesions.

Rational approach to therapy must begin with recognition of the causative micro-organism and, if possible, of the pathological condition favoring its growth in the urinary tract. It is for this reason that results of therapy are listed according to the responsible bacteria. The series is far too small to permit final conclusions regardng the efficacy of one drug as compared to the others.

It is seen that Escherichia coli was the most frequent micro-organism encountered in infections of both the upper and lower portions of the urinary tract (Table 2).

TABLE 4.—*Solubility of Sulfonamides and Sulfonamide Combinations in Normal Urine at Various pH Levels*

	Mg. per 100 Cc.		
	pH 4.5	pH 6	pH 7.5
Sulfadiazine	11.5	47.6	100
Sulfamerazine	25	56	120
Sulfamethazine	52	80	120
Sulfathiazole	61	96	150
Gantrisin®	73	260	530
Equal parts of: Sulfadiazine Sulfamerazine Sulfamethazine	54	101.6	176
Equal parts of: Sulfadiazine Sulfathiazole Sulfamerazine	52	108	205

Its vulnerability to most of the agents used was greater than was that of the other organisms studied both by in vitro and in vivo tests. However, its frequent association with other micro-organisms is striking—especially in infections due to obstructive lesions (Table 6). Theoretically, agents effective against both gram-negative and gram-positive organisms would seem indicated in such Esch. coli infections. The good results obtained with aureomycin and the combination of gantrisin® (Tables 6, 7) and penicillin appear to support this idea. Gantrisin® alone is effective clinically against many Esch. coli strains, but obviously not against most strains of Str. faecalis (Tables 6, 7, 8). The tendency of two or more agents used together to be more effective than therapy with a single one is illustrated in the Esch. coli series (Tables 6, 7). For the most part, patients receiving combined therapy were hospitalized because of pyelonephritis due to obstructive lesions and had severe infections not likely to respond permanently to any type of therapy other than surgery, yet the emergence of other organisms during treatment and the proportion of positive recultures for Esch. coli was much less frequent in patients treated with two or more agents simultaneously than in the less severely infected group receiving a single drug. The remarkably low incidence of permanent "cures" with any type of drug therapy except in the patients having cystitis without obvious obstruction is striking.

Str. faecalis infections (Table 8) are for the most part confined to the lower portions of the urinary tract. In our experience they were found in the absence of excessive numbers of leukocytes in the urine much more commonly than was the case in infections with other micro-organisms. The great difficulty in eliminating them from cultures may be that they so frequently reside in the urethra and thus are not in contact with the drug-laden urine for long periods during treatment. Also they are relatively insusceptible to sulfonamides. When mild disorders of micturition persist after Esch. coli have been eliminated, they are the micro-organisms most frequently encountered in catheterized urine. It is seen that even in the absence of obstructive lesions Str. faecalis infections did not respond well to most of the agents used. Local treatment to the urethra and bladder usually is needed to eliminate them completely.

TABLE 5.—*Analysis of Results in Urinary Tract Infections*

	Results of Recultures After a Single Course of Therapy				
	Negative	Positive	Change in Micro-organism	Total Cases	Infection Controlled
Infection of upper urinary tract	9	21	21	51	3
Cystitis with obstructing lesions of bladder or urethra, or tumor of bladder	17	32	19	68	6
Cystitis or urethritis with no evidence of obstruction	21	13	6	40	19
Total	47 (29.6%)	66 (41.5%)	46 (28.9%)	159	28 (17.6%)

TABLE 6.—*Results of Therapy in Esch. Coli Infections (One Agent Used Alone)*

		Results of Recultures After a Single Course of Therapy			
		Negative	Positive for Esch. Coli	Organisms Changed Under Treatment	Infection Controlled
Aureomycin		5	3	3 Str. Faecalis	..
Chloramphenicol		3	4	1 Str. Faecalis and 1 A. aerogenes	2
Streptomycin		3	2	1 Str. Faecalis and 1 Ps. aeroginosa	1
Terramycin		1	2	....	1
Penicillin		..	2	....	..
Gantrisin®		6	6	10 Str. Faecalis and 1 B. Proteus	2
Combined sulfonamides		..	3	1 Ps. aeroginosa	..
Calcium mandelate		1	..	3 Str. Faecalis and 1 A. aerogenes	..
Mandelamine®		2	6	....	..
No. of cases	72	21	28	23	9
Results of combined therapy—No. of cases	27	11	10	6	5
Totals	99	32	38	29	14

As in the experience of most authors, our efforts to eliminate Ps. aeruginosa from the urinary tract were largely unsuccessful (Table 9). This organism is found almost exclusively in obstructive lesions, particularly those involving primarily the kidney and ureters, and very commonly in association with calculi and tumors the urinary tract. In vitro tests show it to be uite inse.

tive to all the commonly used antibiotics.[6] Reports indicate that polymyxin, aerosporin,® and neomycin are relatively effective against Pseudomonas aeruginosa in vitro,[7] but we did not use these antibiotics because of their toxic effects. In our tests some strains were sensitive to the sulfas, especially gantrisin.® The only patients in whom the urine was cleared of Pseudomonas were three with cystitis and one who also had tuberculosis of the kidney. The only "cures" were in the two cases of cystitis associated with acute prostatitis without obstruction.

Our experience with the other organisms is too limited to permit much discussion. The two "cures" in the Proteus infections were after fairly vigorous treatment and in patients in whom the obstructive lesion was removed. In one young woman who was unable to empty her bladder completely during the acute phase of poliomyelitis the infection cleared after ability to empty the bladder was restored. She took 3 gm. of chloramphenicol and 1 gm. of streptomycin daily for a 10-day period. The other patient had a transurethral resection for prostatic hypertrophy. After he had taken gantrisin® in 1.5 gm. doses every six hours for 16 days, the culture became negative and remained so. In the four patients with Aerobacter aerogenes infections treated with combined sulfonamides, gantrisin,® calcium mandelate, and aureomycin, respectively, the bacterial flora changed under treatment in all, but the infection was not termin One attack of pyelitis caused by Staphylococcus a cleared up under treatment with combined sulfonam An attack of ulcerative cystitis due to Staph. albu curred after treatment with chloramphenicol plus (

Table 7.—*Results of Therapy in Esch. Coli Infections (Two or More Agents Used Simultaneously)*

	Results of Recultures After a Single Course of Therapy			
	Negative	Positive for Esch. Coli	Organisms Changed Under Treatment	Infection Controlled
Gantrisin® and penicillin	4	..	1 A. aerobactor	3
Gantrisin,® penicillin, and chloramphenicol	..	1	....	..
Gantrisin® and streptomycin	..	..	1 Staph. albus	..
Gantrisin® and chloramphenicol	..	1	....	..
Gantrisin® and sulfaguanidine	..	..	1 Str. Faecalis and Staph. albus	..
Gantrisin® and mandelamine®	..	..	1 Str. Faecalis	..
Sulfadiazine and penicillin	..	1	....	..
Combined sulfonamide and penicillin	..	1	....	..
Sulamyd® and penicillin	1	..	....	..
Combined sulfonamide and streptomycin	..	1	1 Ps. aeruginosa	..
Sulfaguanidine and mandelamine®	..	1	....	..
Sulfaguanidine and streptomycin	..	1	....	..
Sulfathalidine® and aureomycin	1	..	....	..
Aureomycin, streptomycin, and *penicillin*	1	..	....	..
Aureomycin and streptomycin	1	..	....	1
Chloramphenicol and penicillin	..	..	1 Ps. aeruginosa	..
hloramphenicol, penicillin, and treptomycin	1	..	....	1
eptomycin and penicillin	..	2	(cord bladders)	..
reptomycin and terramycin	1	..	....	..
Terramycin and mandelamine®	1	..	....	..
Total	11	9	6	5

Table 8.—*Results of Therapy in Streptococcus Faecalis Infections*

	Results of Recultures After a Single Course of Therapy		
	Negative	Positive for Str. Faecalis	Organisms Changed Under Treatment
Gantrisin®	2	4	1 Esch. coli
Sulfadiazine	..	1	....
Combined sulfonamides	..	2	....
Mandelamine®	2	7	3 Esch. coli
Streptomycin	1	1	....
Aureomycin	..	2	1 Esch. coli and 1 B. Proteus
Chloramphenicol	1	2	4 Esch. coli
Terramycin	..	1	....
No.	6	20	10
Gantrisin® and penicillin	1	..	....
Gantrisin® and chloramphenicol	1	..	....
Gantrisin® and mandelamine®	..	1	....
Gantrisin® and *streptomycin*	1	..	....
Streptomycin and penicillin	..	..	1 Esch. coli
Streptomycin and chloramphenicol	1	1	....
Streptomycin, aureomycin, and penicillin	..	..	2 Esch. coli
Chloramphenicol and aureomycin	..	1	....
Mandelamine® and sulfaguanidine	..	..	1 Esch. coli
Mandelamine® and penicillin	..	..	1 ....
No. (combined therapy)	4	3	5
Total	10	23	15

Table 9.—*Results of Therapy in Pseudomonas Infec*

	Results of Recultures After a Single Course of Therapy		
	Negative	Positive for Ps. Aeruginosa	*Organisms* Changed Unde Treatment
Streptomycin	1	..	2 Str. faecalis
Chloramphenicol	..	1	....
Penicillin	..	1	....
Gantrisin®	2	1	....
Combined sulfonamides	..	2	1 A. Aerogenes and Esch. co
Calcium mandelate	..	1	....
Penicillin and aureomycin	..	1	....
Penicillin and streptomycin	1	3	....
Streptomycin and chloramphenicol	..	1	....
Streptomycin and aureomycin	..	1	....
Gantrisin® and aureomycin	..	2	....
Gantrisin,® aureomycin, and *streptomycin*	..	1	....
Gantrisin,® penicillin, and streptomycin	..	3	....
Gantrisin,® penicillin, and chloramphenicol	..	..	1 A. Aerogene
Combined sulfonamide and streptomycin	..	1	....
Chloramphenicol and calcium mandelate	..	1	....
Chloramphenicol, terramycin, aureomycin, and calcium mandelate	..	1	....
Total (30)	4	21	5

bined sulfonamide and chloramphenicol alon original culture from a patient with bilateral p phritis revealed Klebsiella pneumoniae, and after lin therapy the reculture showed a Ps. aerugino hemolytic Streptococcus in a patient with chronic with no obvious obstruction cleared up after a cc penicillin.

---

6. (*a*) Carroll, G.; Allen, H. N., and Flynn, H.: Aureomycin: A Clinical and Laboratory Study of Its Effect in Urinary Infections, J. Urol. **62**: 574 (Oct) 1949. (*b*) Frank, P. F.; Wilcox, C., and Finland, M.: In Vitro Sensitivity of Bacillus Proteus and Pseudomomas Aeruginosa to 7 Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin, and Chloromycetin), J. Lab. & Clin. Med. **35**: 205 (Feb.) 1950. (*c*) Felsenfeld, O.; Volini, I. F.; Ishihara, S. J.; Bachman, M. D., and Young, V. M.: A Study of the Effect of Neomycin and Other Antibiotics on Bacteria, Viruses and Protozoa, ibid. **35**: 428 (March) 1950.

7. Carroll et al.[6a] Frank et al.[6b] Kagan, B. M.; Krevsky, D.; Milzer, A., and Locke, M.: Polymyxin B and Polymyxin E.: Clinical and Laboratory Studies, J. Lab. & Clin. Med. **37**: 402 (March) 1951.

PLAN OF TREATMENT FOR URINARY TRACT INFECTIONS

The data given above illustrate many of the problems arising in the diagnosis and treatment of urinary tract infections. The steps necessary in the planning of logical therapy are obvious. As previously stated, the organism or organisms responsible for the infection must be accurately identified. Foci of infection in direct contact with the urinary tract or those which maintain the supply base for bacteria gaining entrance to the kidneys via lymphatics or blood stream must be eradicated. If roentgenograms, rectal examination, tests for residual urine, or cystoscopy reveal the presence of a lesion which interferes with proper drainage of the urinary tract, such lesions must be corrected before permanent cure of the infection can be effected.

Chemotherapy or antibiotic therapy must be carefully fitted to the bacteriological problem presenting itself.

Table 10 indicates our judgment regarding the use of antibacterial agents, based on information gained on our own cases by the trial and error method, on our own titrations of the sensitivity of the various micro-organisms to the various antibiotics and sulfonamides (summaries of these titrations will be shown in another communication), and on the titrations and clinical results reported by a number of authors.[8] Because in our earlier work our titration technique did not always give consistent results, and because it has been possible to set up the titrations no more often than once a week, the information gained by these tests was not always utilized. When it was possible to administer the drug found by in vitro tests to be most effective, the clinical results were as a rule better than when the micro-organisms in question were relatively insensitive. For instance, in Esch. coli infections when a given strain was sensitive to a given antibiotic in a titer below 20 γ per milliliter—usually less than 10 γ—and that antibiotic was administered in adequate dosage, recultures revealed no growth of the micro-organism in question in 70% of the cases. In the cases in which the sensitivity was above 25 γ per milliliter or in which no sensitivity tests were done, 39.9% of the colon bacilli were eliminated. In the Str. faecalis cultures the differences were not so great, 43% of the recultures being negative for Str. faecalis when the antibiotics shown by in vitro tests to be most effective were used as against 37% in the controls. Our observations at this time are too limited to say more than this.

TABLE 10.—*Choice of Antibacterial Agents in Urinary Tract Infections**

Adult	Aureomycin	Terramycin	Chloramphenicol	Streptomycin	Penicillin	Gantrisin®	Mandelamine®	Rational Combinations
Minimum daily dose....	2 Gm.	2 Gm.	2 Gm.	1-2 Gm.	800,000 U.	6 Gm.	8 Gm.	
Minimum duration Rx..	7 Days	7 Days	7 Days	7 Days	7 Days	10 Days	10 Days	
Organism								
Esch. coli............	1	1	1	2	..	2	3	Aureomycin, terramycin, or chloramphenicol + gantrisin®
Str. *faecalis*..........	1	1	1	2	2	3	3	Aureomycin, terramycin, or chloramphenicol + gantrisin® or penicillin
Ps. aeruginosa †.....	3	2	..	2	..	2	..	Terramycin or streptomycin + gantrisin®
B. proteus............	3	..	1	2	2	1	..	Chloramphenicol + gantrisin®
A. aerogenes †..	3	2	2	2	..	2	..	Terramycin, chloramphenicol, or streptomycin + gantrisin®
K. pneumoniae †.....	2	2	2	2	..	..	..	Chloramphenicol + streptomycin
St. aureus or albus..	1	1	3	..	2	3	..	Aureomycin + penicillin
Str. hemolyticus.....	2	2	..	..	1	2	..	Penicillin + gantrisin®

* 1 = 1st choice. 2 = 2d choice. 3 = 3d choice.
† Polymyxin, aerosporin,® and neomycin appear most effective in these infections, but are not in general use because of their toxicity.

Without question, the sensitivity tests are of utmost value in planning treatment for patients whose urinary cultures have not become sterile following one round of chemotherapy or antibiotic therapy, or for those whose original culture reveals two or more responsible micro-organisms. Aureomycin, terramycin, and chloramphenicol have proved a most important addition to the therapeutic attack because they are effective against both gram-positive and gram-negative urinary tract invaders—with notable exceptions, such as the ineffectiveness of aureomycin against Pseudomonas and of terramycin against Bacillus proteus. For the same reason, and because they are relatively inexpensive, sulfa drugs occupy an important position in the therapy of these conditions. Gantrisin,® sulfadiazine, and the combined sulfas are, however, strangely ineffective against Str. faecalis. Both penicillin and sulfonamides are effective against hemolytic Streptococcus infections, but against staphylococci, aureomycin and terramycin are usually more successful. In vitro tests may reveal, however, that the sensitivity of any given strain within a species to antibiotics may differ sharply from the sensitivities of the majority of the strains.

---

[8] Schweinburg and Rutenberg; Rhoads et al.[2] Svec et al.[4] Carroll et al.[6a] Frank et al.[6b] Felsenfeld et al.[6c] Kagan et al.[7] (*a*) Frank, P. F.; Wilcox, C., and Finland, M.: In Vitro *Sensitivity of Coliform Bacilli* to 7 Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin and Chloromycetin) J. Lab. & Clin. Med. **35**: 188 (Feb.) 1950. (*b*) Carroll, G.: Discussion of Terramycin *in Urinary Tract Infections,* J. Urol. **65**: 343 (Feb.) 1951. (*c*) Thompson, H. T.: Clinical Evaluation of Gantrisin (NU-445), ibid. **62**: 892 (Dec.) 1949. (*d*) Carroll, G.; Allen, H. N., and Flynn, H.: Gantrisin: An in Vivo and *in* Vitro *Study in* Urinary Infections, Urol. & Cutan. Rev. **53**: 677 (Nov.) 1949. (*e*) Logan, G. B.: Urinary Infections in Children, Proc. Staff Meet., Mayo Clin. **24**: 562 (Oct. 26) 1949. (*f*) Cook, E. N.: Symptoms, Diagnosis and Treatment of Urinary Infections of Tract, M. Clin. North America **33**: 1071 (July) 1949. (*g*) Birchall, R., *and Alexander,* J. E.: Medical Aspects of Pyelonephritis, Medicine **29**: 1 (Feb.) 1950. (*h*) Nichols, A. C.: Bactericidal Action of Streptomycin-Penicillin Mixtures in Vitro, Proc. *Soc.* Exper. *Biol. & Med.* **69**: 477 (Dec.) 1948. (*i*) Lazarus, J. A., and Schwarz, L. H.: Clinical Study of a New Sulfonamide (NU 445) in Treatment of Urinary Tract Infections, J. Urol. **61**: 649 (March) 1949. (*j*) Stewart, B. L., and Lash, J. J.: The Clinical Use of NU-445 (Gantrisin) in the Treatment of Urinary Tract Infections: A Report of 100 Cases, ibid. **64**: 801 (Dec.) 1950. (*k*) Adcock, J. D., and Plumb, R. T.: Streptomycin for Urinary Tract Infections, J. A. M. A. **133**: 579 (March 1) 1947. (*l*) Pulaski, E. J., and Amspacher, W. H.: Streptomycin Therapy in Urinary Tract Infections, Surg., Gynec. & Obst. **85**: 107 (July) 1947. (*m*) Garvey, F. K.; Cline, W. A., and Meads, L.: *Chloramphenicol in Bacillary Infections of the* Urinary Tract, South. M. J. **43**: 85 (Feb.) 1950. (*n*) Chittenden, G. E.; Sharp, E. A.; Vonder Heide, E. C.; Bratton, A. C.; Glazko, A. J., and

(Footnote 8 continued on next page)

Vaginal, urethral, prostatic, and enteric infections must be eliminated, and diabetes, if present, must be under good dietary and insulin control if the associated urinary tract infection is to be eliminated by chemotherapy or antibiotic therapy.

What we consider minimal dosage schedules are indicated in Table 3. In our own work, however, we have increased the dose of the oral antibiotics to 3 gm. daily and the duration of the treatment to 10 to 14 days in the patients who can afford it. We have already shifted to a dose of 2 gm. of gantrisin® every six hours and are attempting to continue therapy as long as 14 days. The dose of streptomycin has not been increased.

Our own experience suggests that the use of proper combinations of antibiotics with sulfas and with each other may prove a more efficient way of controlling urinary infections than the use of a single antibiotic or sulfa alone. One of us has shown that in Esch. coli infections, especially those associated with infectious colitis of long standing, the simultaneous use of succinylsulfathiazole (sulfasuxidine®) and streptomycin over considerable periods has given much better results than either agent used alone.[8u] It is hoped that eventually the toxic factors which adversely affect the kidneys and nervous system will be eliminated in aerosporin, polymyxin, and neomycin, as in vitro studies indicate their great effectiveness against Pseudomonas, A. aerogenes, and K. pneumoniae infections, as well as Esch. coli.

SUMMARY

In our series more than 75% of the patients with urinary tract infection had demonstrable obstructions in the urinary tract. The actual incidence was probably higher. In this series it is shown that, with the present methods of treatment commonly used for urinary tract infections, in the commonly employed doses, in slightly more than half the urine was rendered bacteriologically negative for the micro-organism found in cultures before treatment, except in Pseudomonas infections. The recultures were made not earlier than two days to three weeks after course of therapy was completed. The patients were observed over a period of several months, and it was found that only 8 to 15% were permanently "cured." The "cures" were in persons who had no obstruction to urinary outflow originally, or who while under our observation had urinary tract obstructions corrected. In 15 to 30% of cases the original micro-organisms found in cultures disappeared under treatment, but a different species emerged.

Despite these discouraging results, the promptness with which fever, back pain, dysuria, and frequency were relieved and the urine rendered temporarily free of pus by the use of modern antibiotics and sulfonamides was striking. It is confidently believed that the percentage of patients in whom infection can be permanently eradicated can be increased by beginning treatment with (1) identification of the responsible micro-organism, (2) locating all lesions interfering with free flow of urine through the urinary tract, and (3) recognizing foci of infection in contact with or draining into the urinary tract by the lymphogenous or hematogenous routes. After taking whatever additional steps are necessary in relation to steps 2 and 3, the antibiotic or chemotherapeutic agent—or combination of agents—shown by previo experience most likely to be effective against the organism in question should be given in full doses for not less than one week. Table 10 contains suggestions for th most rational choice of antibacterial agents after th responsible bacteria have been identified. If cultures taken 48 hours after the last dose of the drug are positive, sensitivity tests should be made to determine whic of the various antibiotics are most effective against th micro-organism in question. The next agent to be use should be chosen on this basis. Often, a combination o two therapeutic agents will be found more effective tha a single one, especially in infections due to more tha one micro-organism. Suggestions for the most promisin combinations to use depending on the responsible micro organism are made. The present dosages and duration (treatment may have to be increased to improve th results in the treatment of urinary tract infections.

720 N. Michigan (Dr. Rhoads).

Stimpert, F. D.: Treatment of Bacillary Urinary Infections with Chlor mycetin, J. Urol. **62**: 771 (Nov.) 1949. (*o*) Rutenburg, A. M., and Schwei burg, F. B.: Oral Administration of Aureomycin in the Treatment Urinary Infections, New England J. Med. **241**: 698 (Nov. 3) 1949. (Collins, H. S., and Finland, M.: Aureomycin Treatment of Urinary Tr Infections, Surg., Gynec. & Obst. **89**: 43 (July) 1949. (*q*) Long, P. Schoenbach, E. B.; Bliss, E. A.; Bryer, M. S., and Chandler, C. A.: T Experimental and Clinical Use of Polymyxin, Chloromycetin and Aur mycin, California Med. **70**: 157 (March) 1949. (*r*) King, E. Q.; Lew C. N.; Welch, H.; Clark, E. A.; Johnson, J. B.; Lyons, J. B.; Scott, R. and Cornely, P. B.: Clinical Observations on the Use of Terramycin Hyd chloride, J. A. M. A. **143**: 1 (May 6) 1950. (*s*) Sayer, R. J.; Mic J. C.; Moll, F. C., and Kirby, W. M.: Terramycin: Clinical, Pharmacolo and Bacteriologic Studies, Am. J. M. Sc. **221**: 256 (March) 1951. Nesbit, R. M.; Adcock, J.; Baum, W. C., and Owen, C. R.: Clinical perience with Terramycin in Treatment of Refractory Urinary Tract Inf tions, J. Urol. **65**: 336 (Feb.) 1951. (*u*) Crowley, E., and O'Conor, V. Treatment of Persistent Colon Bacillus Infections of the Urinary Tr by Sulfasuxidine and Streptomycin, Surg., Gynec. & Obst. **86**: 224 (Fe 1948.

The Golden Age of Medicine.—The rapid advances made scientific medicine and the extraordinary accumulation knowledge in the present century were made possible larg owing to the fundamental discoveries of a few men during latter half of the nineteenth century. Of these the most outstar ing was unquestionably Louis Pasteur. . . . He pointed way not only to the causation but also to the prevention a treatment of the microbic diseases. He discovered and appli the principles of active immunization by using attenuated c tures. . . . Lister revolutionized the practice of surge . . . Then came Koch, who with Pasteur was the co-foun of the modern science of bacteriology. . . . Ehrlich int duced new methods of staining blood smears and laid the foun tions of the modern science of hematology. He was also the f to set out to produce synthetically a drug for a specific purp and thus established chemotherapy. . . . Takaki pro the dietetic origin of beriberi and outlined measures which to its eradication from the Japanese navy. Shortly afterwa Eijkmann produced beriberi experimentally in fowls, thus pr ing beyond all question the importance of accessory food f tors. Von Behring in 1890 discovered antitoxins and the princi of passive immunization. Röntgen in 1893 discovered X-ra . . . In 1896 Ross proved that the anopheles mosquito the vector of malarial parasite and devised methods for the ef tive prevention of malaria, and in the same year Sir Alm Wright and others introduced antityphoid inoculation. . . At the close of the century in 1898 the Curies isolated radi It is apparent, therefore, that although the treatment of dis at the beginning of this century was largely based on empiric the original and brilliant discoveries, the further developm of which was responsible for the rapid advances in the twent century had already been made. . . . The present cen grasped this rich heritage with both hands, and proved itself unworthy of the gifts it had received.—Leslie Hurley, Golden Age of Medicine, *The Medical Journal of Austr* Sept. 22, 1951.

RENAL TUMORS

O. A. Nelson, M.D.
and
L. H. Mousel, M.D., Seattle

In dealing with renal tumors the urologic surgeon and the anesthetist often encounter major difficulties. A common understanding of individual problems brought about by joint discussions will result in better teamwork. Their cooperative efforts will be reflected in the statistical analyses of morbidity and mortality. In this discussion a simple classification of renal tumors will be followed. The principal types of renal tumors are hypernephroma, carcinoma of the renal pelvis (papillary, noninfiltrating, or infiltrating) .sarcoma, and Wilms' tumor.

In the past the use of the term hypernephroma has been criticised; however, this term serves as well as any other to designate the type of renal tumor that has certain biologic and histological characteristics. According to McDonald,[1] Bell,[2] and others, small adenomas are precursors of hypernephroma. They occur frequently in the renal parenchyma, but only after they have increased in size to approximately 3.5 cc. or larger do they become malignant. At that stage the tumor usually invades the vein, and metastases result. The cellular pattern of hypernephromas is similar to that of the smaller adenomas. McDonald [1] believes that metastasis from hypernephromas takes place mainly by vein, never by artery and rarely, if ever, through the lymphatics. In reviewing a series of 600 renal tumors at the Mayo Clinic he found hypernephromas in 82% of the cases. Small adenomas were also found in 16% of the hypernephromatous kidneys. About 4% of the kidneys examined at routine post mortem also contained benign adenomas.

Biologically and histologically, tumors of the renal pelvis are usually similar to those of the bladder. The prognosis in cases of infiltrating tumors of the kidney is grave. Wilms' tumor is an embryonal adenocarcinoma. Whether it occurs in children or adults is irrelevant in the final outcome, for the prognosis in all cases of Wilms' tumors is unfavorable. Sarcoma of the kidney is similar to sarcoma of other parts of the body.

SYMPTOMS AND DIAGNOSIS

Patients who have renal neoplasm may have symptoms of hematuria, pain, and mass in the loin. These three symptoms are found simultaneously in approximately 40% of cases. In the remaining instances only one or two of the above-mentioned symptoms may be manifested. Any one of these three symptoms requires a study of the upper urinary tract, including pyelography. In searching for the cause and site of hematuria, the clinician must not be misled if on cystoscopy he sees a bleeding point in the bladder or on the prostate gland. Unfortunately, many patients with renal tumor have no symptoms referable to the kidney, but come to the physician complaining of symptoms directly attributable to a metastatic lesion. Pyelography, intravenous or retrograde, is mandatory when renal neoplasm is suspected. A carcinoma of the renal pelvis rarely escapes detection in a well-made pyelogram. However, a tumor in the renal parenchyma may be so located that it causes neither pyelectasis nor caliectasis.

If renal function is satisfactory, excellent delineation of the calices and pelvis can be obtained by intravenous pyelography, using compression over the lower abdomen to obstruct the ureters. A rubber bag from the arm band of a blood pressure cuff is placed between the abdomen and a wide canvas belt. The belt encircles the patient but is not attached to the x-ray table. As soon as the contrast medium has been injected into the vein, the compression bag is distended to 100 mm. Hg. To maintain the pressure both tubes from the bag are clamped to prevent leakage of air. After the desired series of exposures has been made, including the 25-minute film, the compression is released and a second 25-minute film is exposed. A few minutes later a third 25-minute film is made. The technique of retrograde pyelography is so well known that it need not be mentioned at this time. Whatever type of x-ray examination is done, the technique should be such that the film shows the soft tissue shadow of the renal parenchyma. Again, let us emphasize that a normal outline of the renal pelvis and ureter does not rule out renal neoplasm. Such a lesion may be located in the renal parenchyma so far from the pelvis that it causes no deformity of the calices or pelvis.

When hematuria or other clinical signs of renal neoplasm are present, arteriography is the most valuable diagnostic procedure at the physician's command. The majority of kidney tumors have blood sinuses. Therefore, if a radiopaque solution is injected into the aorta proximal to the renal arteries and the film is exposed while the opaque medium is in the sinuses of the tumor, a stippling will be seen in the pyelogram. Such a pooling seen in the roentgenogram of the kidney is pathognomonic of renal neoplasm. By arteriography a vascular tumor can be demonstrated, even though it is very small.

Our technique for arteriography [3] is as follows. The evening before the examination the patient is given 2 oz. (60 cc.) of castor oil; no food is allowed until after examination the following day. With the patient in the prone position on the x-ray table, a 14 by 17 in. (36 by 43 cm.) film of the upper abdomen and lower chest is made. After the control film has been developed and found satisfactory as to the position of the patient and the x-ray technique, the patient is anesthetized, usually by thiopental (pentothal®) sodium. The skin is prepared, and the patient is draped over the left lumbar and lower thoracic regions. An 18-gage, 12 cm. needle is passed through the skin about 5 cm. to the left of the spinous

---

Director of Anesthesia, Swedish Hospital (Dr. Mousel).

Additional references are included in the authors' reprints.

Read in the Symposium on Preoperative Preparation, Anesthesia and Supportive Therapy for Urologic Operations before the Joint Meeting of the Sections on Anesthesiology and Urology, at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

[1] McDonald, J. R.: Personal communication to the authors.

[2] Bell, E. T.: A Classification of Renal Tumors with Observations on the Frequency of the Various Types, J. Urol. 39: 238, 1938.

[3] Nelson, O. A.: Arteriography in Renal and Abdominal Conditions, J. Urol. 53: 521, 1945.

process of the vertebra and about 1 cm. distal to the 12th rib. The needle is advanced toward the patient's right axilla. As the needle is advanced, the vertebra is usually encountered. After the point of the needle has passed over the body of the vertebra, the stylet is removed and the needle slowly advanced. Blood coming through the needle signifies that the aorta has been entered. One of the hazards of arteriography is injection of the opaque medium into a smaller artery. To prevent entrance into branches of the aorta the needle is directed cephalad, so that it will enter the aorta well above the celiac axis. Two small tubes are then connected to the needle. One tube is attached to a syringe filled with isotonic sodium chloride solution. Barbotage will ascertain whether the needle is in the aorta.

The other tube is used for injecting the contrast medium. We use 6 to 10 cc. of an 80% solution of sodium iodide or 10 to 20 cc. of 70% iodopyracet concentrated solution (diodrast®) or methiodal (skiodan®) sodium. The amount used is governed by the size of the patient. The injection must be made rapidly; otherwise, dilution by the blood stream takes place so quickly that delineation of the arteries is indistinct. The x-ray equipment should permit exposure of two or more films in a matter of a few seconds. A single roentgenogram must never be relied upon, especially if it does not reveal any abnormality. The flow of blood through the renal circulation is very rapid. Unless the exposure of the film is made at the instant the opaque medium reaches the sinuses of the tumor, the pooling or stippling will not be visualized. The first film should be made at the instant the opaque medium is injected. Other films should follow every second or two.

During the past 14 years in many instances we have emonstrated the presence of a renal tumor by arterigraphy in patients whose pyelograms showed a normal outline of the renal pelvis and ureter. In our patients no false-positive diagnosis has been made by arteriography. It is advisable to administer intravenously 1,000 cc. of 5% dextrose in distilled water as soon as the patient is returned to bed. We believe the incidence of iodinism has been less following the use of parenteral fluid. Finally, if arteriography is not feasible, surgical exploration should be performed without undue delay. The practice of doing pyelography every few weeks or months when a definite diagnosis has not been established should be condemned. Procrastination jeopardizes the patient's life. The neoplasm may advance from a curable to an incurable stage.

PREPARATION FOR SURGERY

Many patients with a diagnosis of renal tumor are in excellent physical condition and need little preparation for surgery other than a thorough study of their condition and the type of treatment indicated in their specific cases. However, patients who are debilitated and anemic from prolonged blood loss or who have other unrelated conditions, such as cardiac or metabolic diseases, must receive adequate preoperative treatment if the surgical outcome is to be satisfactory. In these patients anemias are corrected by the administration of whole blood. The electrolytic balance, serum protein levels, and hydration are brought within normal limits, if possible, before operation. Many patients who are operated on for removal of renal tumors lose large quantities of blood during operation, usually because of the vascularity of the kidney bec and occasionally because the kidney pedicle slips fro the clamp or an aberrant vessel is inadvertently sectioned previous to ligation. The surgical treatment of rena tumors can always be carried out more safely if an ad quate quantity of blood is available, so that blood can b replaced at once if hemorrhage occurs. It is important i most instances to replace even moderate amounts c blood lost during surgery, so that the patient will not g into shock. Any condition of shock may result in oliguri or anuria. This condition is serious in normal patient and can be doubly serious in patients who have only on remaining kidney. Shock must be prevented at all cost for blood replacement may not be adequate if it is pos poned until the postoperative period.

ANESTHESIA

Anesthesia for arteriography may be secured simpl provided the anesthetist is thoroughly familiar with tl drug used and the conditions necessary for obtaining su cessful arteriograms. Our patients are placed on the x-ra table in the face-down position; 2% thiopental sodiu solution is administered intravenously and rather rapid until the superficial reflexes are absent and respiration normal. The patient should be well anesthetized, for t slightest movement before or during the injection of t iodide solution may result in the dislodgement of t needle from the aorta, with a resultant extravascular i jection. After the x-ray exposures the patient may turned on his back, and he usually responds to stimul tion within a few minutes. In most instances 0.5 gm. thiopental sodium is sufficient.

Anesthesia for the surgical removal of renal tum may be carried out by using spinal, inhalation, or int venous anesthesia with gas or curare in the majority adult patients. We prefer spinal anesthesia in most ca so that the surgeon will have optimal operating con tions. Spinal anesthesia produces muscular relaxati that cannot be duplicated by any other method with seriously depressing cardiorespiratory function. Spi anesthesia also contracts the gut so that it falls away fr the operative field, allowing adequate exposure with the use of many abdominal packs and vigorous retr tion. During the past few years we have used a light dil caine (nupercaine®) hydrochloride anesthesia in the m jority of our cases. Our preoperative medication in th patients is conservative. A small dose of pentobarbi sodium, usually 1½ grains (90 mg.), is given two ho before operation. Morphine or meperidine (demero hydrochloride is used as a narcotic agent. We do not morphine in doses greater than ⅙ grain (10 mg.), nor we exceed 75 mg. doses of meperidine hydrochlori Atropine and scopolamine hydrobromide are usu avoided. We believe these drugs contribute nothing to patient's safety during spinal anesthesia, and certai their drying effect on the mucous membranes adds postoperative discomfort.

The patient is first placed on the operating table in lateral position with the operative side up. An in venous infusion of 5% dextrose in distilled wate started. The patient is then given thiopental sodium travenously until the eyelid reflexes have been abolis

Following preparation of the skin of the back, a 21-gage or 22-gage spinal needle is inserted into the subarachnoid space. The dose of dibucaine hydrochloride solution to be used is determined and cerebrospinal fluid approximately equal in volume to the solution to be injected is removed from the subarachnoid space and discarded. The dibucaine hydrochloride solution, which has been previously warmed to body temperature, is injected into the subarachnoid space very slowly, so that it will tend to collect in the uppermost portion of the dural sac. The spinal needle is removed, and the table is tilted to raise the shoulders to a point where the spinal column makes an angle of approximately 10 degrees with the horizontal. Thus the dibucaine hydrochloride is allowed to flow slowly cephalad to the level of the fourth or fifth dorsal vertebra. If this is not done, traction on the renal pelvis may result in severe shoulder pain, necessitating administration of large quantities of thiopental sodium during manipulation of the kidney. The table is returned to the horizontal position approximately 20 seconds after the drug has been injected. The dose of dibucaine hydrochloride for a given patient depends entirely on the height of that individual. Amounts as small as 8 or 9 cc. of 1:1,500 solution have been used on patients 5 ft. (152 cm.) in height. This dose may be increased to as much as 13 or 14 cc. in patients who are 6 ft. 6 in. (198 cm.) tall. The average dose in the male of 5 ft. 11 in. or 6 ft. is 12 cc. All of our spinal punctures are made with the lateral approach. Our impression has been that the incidence of spinal headache has been reduced and the tender point of which patients frequently complain following lumbar puncture has been almost completely eliminated.

After the return of the operating table to the normal horizontal position the patient is lifted from the table by attendants and a firm wedge-shaped pillow designed for this purpose is placed between the crest of the ilium and the lower ribs. Adequate exposure can be obtained in many patients without the kidney rest by using this pillow routinely. If the kidney rest must be raised, the pillow tends to prevent severe trauma to the lower ribs and compression of the dependent lung by its cushion-like action. The patients are always kept in an amnesic state by the intermittent administration of small amounts of thiopental sodium, and oxygen is given frequently. Anesthesia usually lasts more than two and one-half hours. Small amounts of vasopressor drugs may be indicated occasionally in order to sustain blood pressure within normal limits. However, we have observed that blood pressure falls are not profound when this technique is used.

Anesthetists accepting the responsibility of maintaining anesthesia and administering replacement fluids to patients operated on for renal tumor must be well grounded in the fundamentals of intratracheal intubation and supported respiration, for occasionally the pleura is intentionally or inadvertently opened. This is especially true if the tumor is large or involves the superior pole of the kidney. A sudden collapse of the lung, if not recognized and reexpanded, might result in a fatality. Occasionally patients are encountered for whom the use of spinal anesthesia is contraindicated. These patients may be safely anesthetized by using gas-oxygen-ether or thiopental sodium-gas-curare anesthesia, provided the airway is kept patent and severe depressions are avoided. If inhalation or intravenous methods are used, we prefer intratracheal techniques. In this way obstruction can be prevented and respiratory depressions, which might be brought about by attempts to produce profound relaxation, can be corrected by the intermittent compression of the anesthetic bag to the extent of assuring an adequate tidal ventilation. In our hands the spinal technique described has been far superior to any of the general anesthetic techniques we have used. If a transthoracic approach is planned, endotracheal anesthesia is necessary.

Wilms' tumors in adults may be removed with the patient under spinal anesthesia by a technique similar to that described, or with any other spinal anesthetic drugs. A transabdominal incision is used for the removal of these tumors. Adequate exposure is essential for satisfactory completion of the surgery. Small children undergoing surgery for Wilms' tumor must be operated on under general anesthesia. We prefer to use tribromoethanol (avertin®) as a basal narcotic agent in most cases. Children under 7 years of age are not given any narcotics or belladonna drugs, and doses of 70 mg. of tribromoethanol per kilogram of body weight are never exceeded. After the administration of tribromoethanol in the child's room he drops off into light sleep. He is then taken to the operating room where anesthetics are given by inhalation. Intubations are done in children routinely. If the child is under 5 years of age, he will probably undergo anesthesia more safely if the anesthetic agents and oxygen are administered to him through a Digby-Leigh valve. This valve allows the child to breathe more freely than he would be able to do through most anesthetic machines, for resistance to respiration has been reduced to a minimum and there is no rebreathing. If the pleura is opened, complete expansion of the lung can be maintained by manual compression of the anesthetic bag.

Blood loss must be evaluated accurately and replaced during operation. Too frequently the size of the patient is not taken into consideration when blood loss is estimated. A loss of 300 cc. from the circulation of a 40 lb. (18.1 kg.) child is equivalent to 25% of his total blood volume. This amount, which is frequently lost without producing significant circulatory changes in adult patients, may result in severe shock in children.

TREATMENT

Nephrectomy is the recognized treatment for renal neoplasm. The question of preoperative and postoperative irradiation of renal tumor has not been settled. Irradiation will shrink a Wilms' tumor, making it amenable to surgery, but irradiation alone does not destroy all the neoplastic cells; therefore, nephrectomy is imperative if the patient is to survive. Another factor concerning irradiation is illustrated by an unpleasant experience we had with postoperative irradiation in an 8-year-old boy whose preoperative diagnosis was Wilms' tumor. The diagnosis of this huge tumor was never clearly established. The young man is still living and is apparently well 16 years after the operation. Unfortunately, there is a marked scoliosis owing to the fa[illegible] [illegible] irradiated tissue to grow with the remainder of [illegible] this resulted from [illegible] irradia[illegible] [illegible] prepared to say, b[illegible] [illegible]ation [illegible] mind.

When nephrectomy is done, it is of utmost importance to expose and ligate the renal veins and arteries before manipulating the tumor mass. If veins are involved in the growth, as frequently is the case, they must be removed with the tumor if at all possible. An abdominotransperitoneal approach has been, in the past, the recognized way to deal with bulky renal tumors. However, within the last few years two types of thoracic approaches have been devised by two different surgeons. Since the major portion of the kidney and its pedicle is within the thoracic cage, it has been found that by severing the 12th, 11th, and sometimes the 10th rib posterior to the angle the lower thoracic cage may be mobilized to make exposure of the renal pedicle quite satisfactory. Chute [4] has devised an operation in which he removes the 10th or 11th rib and then traverses the pleural cavity and goes through the diaphragm and into the peritoneal cavity. Chute and his co-workers have excellent exposure of the renal pedicle. Nevertheless, we must admit, being too unfamiliar with chest surgery, we have not used his incision.

Nagamatsu [5] has devised an approach involving exposure of the lower two or three ribs at the posterior angle. After severing the ribs at that location, he removes a short segment from each rib, so that after the operation there will be no overriding of the rib ends to cause pain. He injects each intercostal nerve exposed with beta-diethylaminoethyl-para-ethoxybenzoate hydrochloride (intracaine®) in oil or pinches the nerve with forceps t prevent postoperative pain. The incision is extended an teriorly under the 12th rib, as far as necessary for satis factory exposure. He does not intentionally enter th pleural or peritoneal cavity. We have used the incision o Nagamatsu and found it more satisfactory than the trans peritoneal approach. However, *in one* patient with bulky tumor extending medially from the upper pole wit an aberrant artery in the lower pole, the loss of bloo from the sinuses was greater than it should have been Fortunately, this patient survived and made a good re covery.

SUMMARY

We believe it is important to make a detailed pre operative diagnosis of the extent and location of th tumor in relation to the kidney and also to know the exac location of the renal blood supply. This information ca be obtained readily by arteriography. Careful preopera tive preparation is essential in patients who are debil tated. Carefully planned anesthetic management reduce morbidity and mortality. Blood loss should be replace during operation.

Swedish Hospital (Dr. Mousel).

[4] Chute, R.: The Thoracico-Abdominal Incision in Urological Su gery, J. Urol. **65**: 784, 1951.

[5] Nagamatsu, G.: Dorso-Lumbar Approach to Kidney and Adren with Osteoplastic Flap, J. Urol. **63**: 569, 1950.

ANESTHETIC PROBLEMS IN HORMONAL DISORDERS OF THE ADRENAL GLANDS

E. M. Papper, M.D.
and
George F. Cahill, M.D., New York

The number of patients afflicted with recognized disorders of the adrenal glands is obviously small. Even smaller at present is the number with adrenal disturbances who are candidates for surgical treatment. As knowledge, including improved diagnostic measures, concerning these disease processes is developed, operative intervention will probably be increased in scope and frequency in the care of these patients. However, the statistical incidence of these diseases in no way reflects the interest or importance of the adrenal glands i clinical medicine and surgery. These small glands ex ercise widespread influence on many physiological ad justments of the body to the environment. Studies hav demonstrated some of the effects of the adrenals on ci culation,[1] electrolyte metabolism,[2] renal function,[3] carbo hydrate metabolism,[4] and other endocrine organs.[5] R cently there has been extensive interest and speculatio on the relationship of adrenal activity to a large varie of apparently unrelated diseases and environment stresses.[6]

In view of the intrinsic interest in the effects of t adrenal glands on the body economy and the diffic and complex problems their dysfunction may produce patients who require operative intervention, it w thought that a consideration of anesthetic problems a *some surgical implications for patients with* abnorm adrenal activity would be profitable. This paper co cerns the principles of practical aspects of the manag ment of patients with adrenal diseases who require oper tion.

HYPOFUNCTION OF THE ADRENAL CORTEX

Addison's Disease.—It has been reported that p tients with Addison's disease are susceptible to infectio to the loss of sodium chloride and sensitive to certa drugs (narcotics, sedatives, insulin, and thyroid ho

---

From the Departments of Surgery (Anesthesiology) and Urology of the College of Physicians and Surgeons, Columbia University, and the Anesthesia Service and the J. Bentley Squier Urological Clinic of the Presbyterian Hospital.

Read in the Symposium on Preoperative Preparation, Anesthesia, and Supportive Therapy for Urologic Operations before the Joint Meeting of the Sections on Anesthesiology and Urology, at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

[1] Oliver, G., and Schaefer, E. A.: The Physiological Effects of Extracts of the Suprarenal Capsules, J. Physiol. **18**: 230-276, 1895.

[2] Loeb, R. F.: Chemical Changes in the Blood in Addison's Disease, Science **76**: 420-421, 1932.

[3] Talbott, J. H.; Pecora, L. J.; Melville, R. S., and Consolazio, W. V.: Renal Function in Patients with Addison's Disease and in Patients with Adrenal Insufficiency Secondary to Pituitary Pan-Hypofunction, J. Clin. Invest. **21**: 107-119, 1942.

[4] Long, C. N. H.; Katzin, B., and Fry, E. G.: The Adrenal Cortex and Carbohydrate Metabolism, Endocrinology **26**: 309-344, 1940.

[5] Houssay, B. A.; Biasotti, A.; Mazzocco, P., and Sammartino, R.: Acción del extracto antero-hipofisario sobre las glándulas adrenales, Rev. Soc. argent. de biol. **9**: 262-268, 1933.

[6] Selye, H.; Dosne, C.; Bassett, L., and Whittaker, J.: On the Therapeutic Value of Adrenal Cortical Hormones in Traumatic Shock and Allied Conditions, Canad. M. A. J. **43**: 1-8, 1940.

mone). They are considered as grave a risk for anesthesia and operation as any in clinical practice. On the basis of previous experience, the hesitation to subject the patient with Addison's disease to the strain of anesthesia, operation, or childbirth is entirely understandable. As recently as 1929 Snell and Rowntree [7] believed the risk of operation in these patients prohibited any expectation of success. Even as minor a procedure as dental extraction was fraught with the possibility of Addisonian crisis and death. In fact, Greene and his colleagues [8] in 1933 reported the first known survival of operation by a patient with Addison's disease. In the 15 operative cases reported by these authors, only 4 patients survived relatively minor surgical procedures. Only within the past two decades, with better comprehension of the role of sodium chloride therapy in adrenal cortex insufficiency and the availability of extracts of the adrenal gland and, more recently, cortisone, have a number of survivals after operation been reported in the literature. However, even with increased understanding of this disease and its proper management, surgical intervention has never been undertaken lightly in patients with hypofunction of the adrenal cortex.

It is not difficult to understand why these patients, if inadequately treated, withstand anesthesia and operation so poorly. The specific chain of biochemical events leading to Addisonian crisis may be precipitated with relative ease in the patient subjected to anesthesia and operation. Loeb [2] and Harrop [9] demonstrated that the events preceding crisis begin with the loss of sodium and chlorides in the urine and the consequent loss of relatively large quantities of water. Since the plasma volume is also depleted, the available circulating fluid in the blood is reduced. Fasting, nausea, vomiting, and occasionally diarrhea, which are accentuated if not caused by anesthesia and operation, contribute significantly to the primary derangement, leading to a further loss of circulating blood dehydration, and, finally, circulatory collapse. Even though this series of events in the Addisonian crisis is well documented, it is not completely clear why patients with adrenal cortex insufficiency respond regularly in this fashion to the various stresses of infections, operations, and other abnormal environmental situations. Perera [10] has suggested that these patients may have a defect in the response of the autonomic nervous system that contributes to their inability to react normally to altered environmental conditions or even to minor stimuli.

Anesthetic and surgical experiences in patients with Addison's disease are not many. Recently, one of us (E. M. P.) [11] examined the influence of anesthesia and operation on morbidity and mortality in 19 patients subjected to 23 anesthetic procedures at the Presbyterian Hospital in New York and the Peter Bent Brigham Hospital in Boston. These patients represent, as nearly as could be determined, the total number of operative cases at both institutions in the last two decades. Dental extractions were not included. The youngest patient was 12 years old and the oldest 59. Ten patients were males and nine were females. The known duration of adrenal cortex insufficiency varied from three months to six years.

The presence of Addison's disease was not recognized prior to operation in five patients. Of these five patients, one died on the operating table, two died following postoperative circulatory collapse, and operation was cancelled for one because of uncontrollable hypotension during anesthesia. The fifth patient suffered a severe postoperative circulatory collapse but recovered. None of these patients was prepared with sodium chloride or specific hormone therapy prior to anesthesia and operation. The 14 patients whose disease had been diagnosed were prepared with adequate doses of desoxycorticosterone acetate and/or adrenal cortex extract and sodium chloride before operation or obstetrical delivery. In the patients who were properly treated with sodium chloride and desoxycorticosterone acetate or adrenal cortex extract, premedication with belladonna drugs, morphine, meperidine (demerol®) hydrochloride, or a barbiturate appeared to be satisfactory and did not produce undue depression. This finding was rather surprising in view of the traditional expectation that potent hypnotic or sedative drugs might precipitate Addisonian crisis. In fact, difficulty with depressant drugs was observed only in the patients whose disease was unrecognized prior to the administration of anesthesia.

Various anesthetic agents and techniques were used. Ten patients were anesthetized with ether, eight with cyclopropane, one with thiopental sodium and nitrous oxide, and four were given local or regional anesthesia. A thorough analysis of the physiological changes that occurred during anesthesia or in the postoperative period demonstrated comparatively little relationship between the anesthetic agent or technique employed and the complications that arose. All of the unprepared patients who died had been anesthetized with ether. However, it must be reemphasized that no patients who died had received adrenal cortical hormone or sodium chloride therapy prior to or during anesthesia and operation.

The single greatest complication that occurred during anesthesia or postoperatively was hypotension. There was no specific relationship between hypotension and the type of anesthesia employed. It was rather striking that hypotension usually appeared suddenly during anesthesia. The hypotension was vigorously treated as presumptive evidence of an impending Addisonian crisis. Hypotension was managed by the intravenous administration of water-soluble whole adrenal cortex extract, whole blood, or plasma. In fact, the maintenance of satisfactory arterial blood pressure appeared to be a most useful clinical guide to the administration of adrenal cortex extract as well as parenteral fluids. Two patients showed fluid retention, edema, and definite evidence of conges-

---

7. Snell, A., and Rowntree, L.: Clinical Experience with Addison's Disease, Ann. Int. Med. 3: 6-28, 1929.

8. Greene, C.; Walters, W., and Rowntree, L.: Surgical Operations in Addison's Disease—Successful Epididymectomy and Orchidectomy for Tuberculosis, Ann. Surg. 98: 1013-1017, 1933.

9. Harrop, G. A.; Soffer, L. J.; Ellsworth, R., and Trescher, J. H.: Studies on the Suprarenal Cortex: Plasma Electrolytes and Electrolyte Excretion During Suprarenal Insufficiency in the Dog, J. Exper. Med. 58: 17-38, 1933.

10. Perera, G. A.: Acetyl-beta-methylcholine in Addison's Disease, J. A. M. A. 128: 1018-1020 (Aug. 4) 1945.

11. Schwartz, H.; Derrick, W. S., and Papper, E. M.: The Influence of Anesthesia, Operation and Obstetrical Delivery upon Patients with Adrenal Cortical Insufficiency, Surg., Gynec. & Obst., to be published.

tive heart failure postoperatively. These two patients had received excessively large doses of desoxycorticosterone acetate, and the edema and congestive failure disappeared only when the drug was withdrawn.

The conclusion from this study was that a specific relationship could not be established between the precipitation of Addisonian crisis and the anesthetic agent or operative procedure. There was also little doubt that circulatory collapse was the most dangerous and the most frequent complication and that it occurred regardless of the type of anesthesia and operation. Circulatory collapse was minimized by proper preparation before operation with adrenal cortex extract in large doses and/or desoxycorticosterone acetate and sodium chloride. Furthermore, hypotension during the anesthetic period could be controlled best by the administration of aqueous adrenal cortex hormone extract together with sodium chloride and whole blood. The postoperative management of circulatory collapse was essentially that outlined by Thorn.[12] Apparently patients with Addison's disease respond to the stress of operation and anesthesia in the same manner as other patients but with a considerably narrower range of compensation. In order to minimize, from the anesthetic and surgical standpoint, the possibility of Addisonian crisis, great precision must be exercised in the administration of anesthesia to avoid anoxia, asphyxia, or hypotension. Agents or techniques that regularly produce significant falls in arterial pressure or are frequently associated with anoxia are best avoided. Gentleness and care in surgical manipulation to minimize hemorrhage and excessive trauma are equally essential. However, there is little question that the survival of anesthesia and operations by patients with renal cortex insufficiency depends on good preoper e preparation and the continuation of intelligent pervision and replacement therapy with adrenal cortex xtract, sodium chloride, dextrose, and water to maintain electrolyte and circulating blood volume as near normal levels as possible. The anesthesiologist and the surgeon can do comparatively little in a positive constructive way in helping the patient through operation and anesthesia; however, inept or mismanaged anesthesia and operation are potentially very harmful, so that the operating team must exercise its greatest judgment and skill in the technical management of the patient with adrenal cortex insufficiency.

Suprarenal Apoplexy (Waterhouse-Friderichsen Syndrome).—Although this almost uniformly fatal disease has been known since 1894,[13] it was first summarized in a review by Waterhouse in 1911.[14] Most authors familiar with this syndrome agree with Martland[15] that the classic syndrome of cyanosis, purpura, petechiae, and bilateral massive adrenal hemorrhage is associated in the large majority of cases with a meningococcic septicemia. The disease is fulminating and usually terminates fatally within 24 to 48 hours. Its termination is characterized by hyperpyrexia and circulatory collapse. Treatment usually consists of combating sepsis, control of the vascular collapse, and supportive adrenal cortex therapy This lesion has a slight but curious interest for anesthesiologists and surgeons. Occasional cases of the Waterhouse-Friderichsen syndrome are associated with surgical lesions, e. g., peritonitis, arterial embolism, and othe surgical catastrophes. Although, to the best of our knowledge, no patient with massive bilateral adrenocortica hemorrhage has successfully been subjected to operativ treatment of an acute surgical situation, it seems possibl with the availability of potent adrenal cortex hormone such as cortisone, that successful operative cure may b hoped for in the future.

One such case was observed recently at the Presbyterian Hospital.[16] The patient was a middle-aged whi man with embolism in a femoral artery. Acute a rapidly fatal circulatory collapse developed. At autop severe bilateral adrenal hemorrhage was found. Possib adequate hormonal replacement would have permitt successful embolectomy. In the light of present know edge, nothing further can be stated, except that t amelioration by operation of an occasional serious sur cal lesion associated with severe, apparently spontaneo suprarenal hemorrhage is possible with hormonal the apy.

ADRENAL CORTICAL TUMORS

Nonhormonal Tumors.—The surgical and anesthe implications of these lesions must be contrasted bric with those of other tumors of the adrenal cortex, whi pose much more serious problems. Nonhormonal tum produce signs and symptoms referable to any large ret peritoneal growth. One of us (G. F. C.) in a previo communication has described the clinical picture of the lesions in some detail.[17] Essentially, the presenting sym toms are abdominal or flank pain, loss of weight, a malaise. Since the tumors are usually malignant, met tases in the regional nodes, lungs, and liver are not usual. The tumors can be outlined satisfactorily by pe renal insufflation according to the method of Cahil An unfortunate characteristic of nonhormonal tumors that they grow extremely large before the diagnosis made. At operation the problems are extensive blo loss, the circulatory depression associated with the moval of large intra-abdominal or retroperitoneal mass and, occasionally, the anesthetic and surgical proble incident to operations within the pleural cavity. From anesthetic standpoint, the essential principle is the p vision of safe and adequate relaxation with minimum turbance of other physiological activities. No anesth agent or method proved superior to another in our har In general, inhalation anesthesia with an endotrac airway is preferred because of the greater flexibility management of the problems described. Transfus must be adequate and planned well in advance of

---

12. Thorn, G. W.: The Diagnosis and Treatment of Adrenal Insufficiency, Springfield, Ill., Charles C Thomas, Publisher, 1950.
13. Deleted in proof.
14. Waterhouse, R.: A Case of Suprarenal Apoplexy, Lancet 1:577, 1911.
15. Martland, H. S.: Fulminating Meningococcic Infection with Bilateral Massive Adrenal Hemorrhage (The Waterhouse-Friderichsen Syndrome), with Special Reference to Pathology, Medico-Legal Aspects and Incidence in Adults, Arch. Path. 37:147-158 (Feb.) 1944.
16. McAllister, F.: Personal communication to the authors.
17. Cahill, G. F.; Melicow, M. M., and Darby, H. S.: Adrenal Cortical Tumors: Types of Nonhormonal and Hormonal Tumors, Surg., Gynec & Obst. 74:281-305, 1942.
18. Cahill, G. F.: Tumors of the Adrenal and the Use of Air Insufflation in their Diagnosis, Radiology 37:533-544, 1941.

operative procedure. The ultimate outcome of patients with nonhormonal adrenal cortical tumors depends on the presence or subsequent development of metastases and not primarily on the anesthetic or surgical management immediately at operation.

The Adrenogenital Syndrome.—The adrenogenital syndrome usually results from hyperplasia of the adrenal cortex but may be associated with a cortical tumor. The presence of a tumor and the need to examine the pelvic reproductive organs directly for the establishment of the true sex of the pseudohermaphrodite are the chief indications for operation and anesthesia.

The adrenogenital syndrome may occur at any age, but is commonest in the female at birth. In the female the signs and symptoms are referable to masculinization. In the male the chief characteristics are precocious sexual and musculoskeletal development. Cortical tumors are most frequently found in the prepubescent years. The majority of patients with the adrenogenital syndrome pose no problems in anesthetic management. They withstand operation and anesthesia well, since the disease has no untoward influence on vital metabolic processes. There are two important exceptions to this generalization. First, an occasional patient with virilism may also have Addison's disease. Three such patients have been studied at the Presbyterian Hospital. The anesthetic and surgical problems in the presence of Addison's disease are grave, as indicated above, if specific treatment is inadequate or neglected. Therefore, all patients with the adrenogenital syndrome should be studied to uncover complicating Addison's disease, and appropriate therapy should be instituted.[19] Second, the patient with the adrenogenital syndrome may have a coexisting Cushing's syndrome. This syndrome presents serious problems that will be considered below.

Cushing's Syndrome.—In 1932 Cushing [20] described the syndrome that bears his name. The characteristic extensive metabolic derangements are hypertension, glycosuria, hyperglycemia, osteoporosis, and a peculiarly distributed painful obesity. These signs and symptoms sometimes occur in association with virilism. Although Cushing's original description referred to adenomatous change in the basophilic cells of the anterior pituitary as the etiological factor, adrenal cortical tumors are frequently associated with this syndrome. Despite considerable controversy as to the exact etiology of Cushing's syndrome, it is now generally accepted that certain adrenal cortical tumors may produce the characteristic disease pattern. The results of operative excision of adrenal cortical tumors responsible for the Cushing syndrome are extremely satisfactory. There is some disagreement as to the therapeutic efficacy of the resection of a single hyperplastic adrenal gland in the cure of Cushing's syndrome. The partial resection of both adrenals, however, is a much more difficult procedure technically and is quite unpredictable in terms of the extent of remaining adrenal cortical tissue. Resection also carries the risk of the production of Addison's disease, which must then be treated by substitution hormonal therapy.

In contrast to the surgical therapy of the uncomplicated adrenogenital syndrome, operative correction of Cushing's syndrome, in terms of either resection of a cortical tumor or an extensive resection of hyperplastic adrenals, is a serious risk to the patient. The incidence of severe postoperative shock following the resection of adrenal cortical tumors responsible for Cushing's syndrome is high. The mortality rate has been reported to vary from 39%[21] to almost 50%.[22] Of the six patients reported on by Soffer, three died shortly after the completion of the operation.[23] This high mortality occurred despite apparently adequate preoperative preparation with adrenal cortex extract and isotonic sodium chloride solution given intravenously. Death was probably the result of shock which, in turn, was associated with acute adrenal insufficiency. This type of adrenal insufficiency may result from acute lack of adrenal cortical factors other than the salt-retaining factors. These substances are as yet unidentified. Since death usually occurs within 48 hours of the time of operation, the evidence suggests that the classic Addisonian crisis with the loss of sodium chloride and fluids is not entirely, and perhaps not chiefly, responsible for the pattern of difficulty and ultimate death in the postoperative period. It is of some interest that in the experimental animal Kleinberg and his co-workers [24] have shown that postadrenalectomy shock can be prevented by thorough block of the adjacent sympathetic fibers with procaine hydrochloride prior to extirpation of the adrenals. A similar protection against collapse is afforded by spinal cord section at the first or second thoracic levels. The implication that there is an autonomic nervous system factor in the catastrophe following adrenal cortex resection in Cushing's syndrome needs further study. Another factor of great significance in the high mortality of Cushing's syndrome is that the contralateral adrenal gland is frequently atrophic. In contrast, patients with the adrenogenital syndrome rarely have controlateral atrophy of the adrenal glands.

Preparation for operation of patients with Cushing's syndrome, either with or without an adrenal cortical tumor, is extremely important. These patients are prepared with liberal doses of adrenal cortex extract and sodium chloride at least two days prior to operation. During the operative procedure dextrose and isotonic sodium chloride solutions are administered in addition to larger doses of whole adrenal cortex extract. The tempo of replacement therapy is increased to coincide in time with the actual removal of the tumor. In the postoperative period vigorous replacement therapy with adrenal hormones as well as sodium chloride is of great help. The development of serious hypotension after the removal of the tumor has been treated with varying degrees of success, not only by the intensification of specific hormone replacement but by intravenous drips of epinephrine or arterenol as well as whole blood and plasma transfusion. Replacement therapy with some of the newer steroids and hormones such as cortisone offers considerable promise. The results of cortisone therapy will be of interest as more data are accumulated.

---

[19] Jailor, J.: Personal communication to the authors.

[20] Cushing, H.: Basophil Adenomas of the Pituitary Body and their Clinical Manifestations (Pituitary Basophilism), Bull. Johns Hopkins Hosp. **50**: 137-195, 1932.

[21] Cecil, H. F.: Hypertension, Obesity, Virilism and Pseudohermaphroditism as Caused by Suprarenal Tumors, J. A. M. A. **100**: 463-466 (Feb. 18) 1933.

[22] Lukens, F. D. W.; Flippen, H. F., and Thigpen, F. M.: Adrenal Cortical Adenoma with Absence of the Opposite Adrenal: Report of a Case with Operation and Autopsy, Am. J. M. Sc. **193**: 812-820, 1937.

[23] Soffer, L. J.: Diseases of the Adrenals, Philadelphia, Lea & Febiger, 1946, p. 251.

[24] Kleinberg, W.; Remington, J. W.; Drill, V. A., and Swingle, W. W.: The Nervous Factor in the Circulatory Failure Induced in Adrenalectomized Dogs by Intestinal Stripping and a Single Bilateral Adrenalectomy, Am. J. Physiol. **137**: 362-370, 1942.

Comparatively little has been learned about the most satisfactory type of preanesthetic sedation for these patients. Our practice in general has been to employ a narcotic such as morphine or meperidine hydrochloride and scopolamine hydrobromide in doses somewhat smaller than might ordinarily be used. The actual anesthetic agents and techniques are not clearly decided upon, since clinical experience is not extensive enough for evaluation. However, to facilitate the transperitoneal exposure found eminently satisfactory by one of us (G. F. C.) in tumor cases, the nitrous oxide-ether sequence through an endotracheal airway has been satisfactory. Great care is taken to avoid agents and methods that may regularly produce sudden hypotension, since this is a serious complication of the operative procedure in any event. Therefore, spinal anesthesia, despite its possible theoretical advantages of autonomic denervation, has not been employed. Basal anesthesia with tribromoethanol (avertin®) has been used either not at all or sparingly. Cyclopropane has not found particular favor, because of the frequent need for therapy of a hypotensive state with epinephrine or arterenol. Since these substances produce ventricular arrhythmias of a serious nature more commonly with cyclopropane than with ether, the former agent has been avoided. No experience has been acquired with the use f thiopental (pentothal®) sodium and nitrous oxide with ygen or with the various curariform relaxing agents.

Combinations of the adrenogenital syndrome and the metabolic changes associated with Cushing's syndrome are possible. These situations are managed in the light of the more serious complications of Cushing's syndrome.

ADRENAL TUMORS OF MEDULLARY ORIGIN

Sympathogonioma and Neuroblastoma.—The sympathogoniomas and the neuroblastomas are derived from sympathetic nervous tissue. The former are usually highly malignant, occur in infancy, and grow to extremely large size. Surgical therapy is often unsuccessful. The surgical and anesthetic problems are those associated with massive resection of intra-abdominal tumors. The surgical exploration has been transabdominal. The single most important factor in operative management is replacement of blood in fairly large quantities. The neuroblastomas occur in children, are usually highly malignant, and present anesthetic and surgical problems similar to those of the sympathogoniomas.

Pheochromocytoma.—Tumors of adrenal medullary cells of chromaffin origin have been known since 1886. However, the first correctly diagnosed and successfull removed tumor was reported in 1929.[26] Histologically the vast majority of pheochromocytomas are benign, bu functionally they are quite malignant, because of the excessive secretion of epinephrine and/or arterenol. Although the tumor is usually found in one of the adren glands, it may occur in the lumbar area in the region the sympathetic chain, in the organs of Zuckerkandl, an rarely, in the chest or brain. The outstanding clinic features have been summarized recently by Smithwic and his associates.[27] Hypertension, paroxysmal in 30% or continuous in 70%, is prominent. Hyperhidrosis frequent and severe. Signs of peripheral vascular co striction during attacks are a constant finding. Objecti findings are those associated with an elevated metabol rate, high blood pressure, and a retroperitoneal tumo There are many specific tests for the presence of phe chromocytoma. The most useful are the antagonist piperoxan (benzodioxane®) hydrochloride test describ by Goldenberg,[28] the cold pressor test, and the provoc tive tests, such as the histamine test.[29]

In a recent review of the literature [30] reports of 91 p tients who had been operated on were studied. In t cases in which pheochromocytoma was suspected a proper preparation made, the mortality was 24%. In p tients whose adrenal lesion was not suspected, a varie of operative procedures resulted in a mortality of 50 Clearly therefore, unrelated surgical operations are a d tinct hazard to the patient with pheochromocytoma.

Preoperative preparation of these patients is based the need to correct as far as possible the hypersecreti of epinephrine or arterenol prior to the induction of an thesia. An adrenolytic drug, N,N,-dibenyl-beta-chlo ethylamine (dibenamine®), 5 mg. per kilogram of bo weight, has been administered intravenously 24 hours fore the scheduled time of induction of anesthesia.[31] T procedure is not without risk, because of a possible s tained hypotension. Premedication can be given acco ing to accepted principles. Morphine or meperidine drochloride and scopolamine hydrobromide are usu chosen. The selection of anesthetic agents and meth has not in the past been given serious consideration. D are not available in more than half of the reported ca In the 41 cases in which anesthesia is mentioned, alm all known agents were used. The relationship betw anesthesia and the results of operative treatment is possible to evaluate from the evidence available.

Our own experience includes 12 operations on patients with proved pheochromocytoma. Eight patie survived; 14 other patients were explored without

---

[25] Fränkel, F.: Ein Fall von doppelseitigem, völlig latent verlaufenen Nebennicrentumor und gleichzeitiger Nephritis mit Veränderungen am Circulationsapparat und Retinitis, Arch. Path. Anat. **103**: 244-263, 1886.

[26] Pincoffs, M. C.: Case of Paroxysmal Hypertension Associated with Suprarenal Tumor, Tr. A. Am. Physicians **44**: 295-299, 1929. Shipley, A. M.: Paroxysmal Hypertension Associated with Tumor of the Suprarenal, Ann. Surg. **90**: 742-749, 1929.

[27] Smithwick, R. H.; Greer, W. E. R.; Robertson, C. W., and Wilkins, R. W.: Pheochromocytoma: A Discussion of Symptoms, Signs and Procedures of Diagnostic Value, New England J. Med. **242**: 252-257, 1950.

[28] Goldenberg, M.; Snyder, C. H., and Aranow, H., Jr.: New Test for Hypertension due to Circulating Epinephrine, J. A. M. A. **135**: 971-976, 1947.

[29] Roth, G. M., and Kvale, W. F.: Tentative Test for Pheochromocytoma, Am. J. M. Sc. **210**: 653-660, 1945.

[30] Apgar, V., and Papper, E. M.: Pheochromocytoma: Anesthetic Management during Surgical Treatment, A. M. A. Arch. Surg. **62**: 634-646 (May) 1951.

[31] Cahill, G. F., and Monteith, J. C.: The Use of Dibenamine and Norepinephrine in the Operative Treatment of Pheochromocytoma: Report of 2 Cases, New England J. Med. **244**: 657-661, 1951.

lesion being demonstrated. In the 12 operations in the proved cases, ether was administered to nine patients, cyclopropane to two, and thiopental sodium with nitrous oxide and oxygen to one. The two patients who died during operation received cyclopropane and ether respectively.

The problems in anesthetic management largely concern four important elements: The need for adequate relaxation, the possibility of accidental pneumothorax, the physiological effects of excessive secretion of epinephrine or arterenol during manipulation of the tumor, and the sudden circulatory depression that may occur after extirpation of the secreting mass. Relaxation can be secured in many ways. We have elected moderate depths of ether anesthesia as a reasonable approach. No ill-effects from the sympathomimetic action of ether have been noted. Curare has not been employed in this series. An endotracheal airway is regularly established to aid in the care of pneumothorax should it occur.

The problem of the physiological effects of excessive medullary secretion is more serious than those mentioned previously. No matter what anesthetic regimen is followed, anoxia must be avoided at all costs. Anoxia appears to be as potent a stimulus to medullary secretion as tumor manipulation. The potential causes of anoxia are many and well known. Agents which, in the presence of epinephrine, produce serious ventricular arrhythmias must also be avoided. Cyclopropane, chloroform, and ethyl chloride are therefore unwise choices, in our opinion, for these patients. Despite all precautions, including meticulous isolation of the adrenal from the systemic circulation, paroxysmal hypertension may ensue. Piperoxan hydrochloride (20 mg. or more) is used intravenously to combat this unusual hypertension. The marked hypotension and circulatory collapse following excision of the tumor is best controlled by the injection by intravenous drip of arterenol (4 mg. per liter).[31] The drip is usually given at a rate that will maintain a moderate hypertension. It is an essential therapeutic aid in the first three days of postoperative convalescence.

BILATERAL ADRENAL EXTIRPATION

Total or subtotal adrenalectomy has been considered and completed for reactivated carcinoma of the prostate by Huggins and Scott.[32] This operation has also been considered as a method of therapy for malignant hypertension in a small number of patients by Thorn [33] and Zintel.[34] In the latter instance the rationale is the elimination of unknown hypertensive factors of the adrenal gland. The procedure is thought possible because of the availability of adequate substitutive hormonal therapy (cortisone, desoxycorticosterone acetate and sodium chloride) to control the surgically induced Addisonian state.

Thorn, in an unpublished communication to one of us (G. F. C.), has summarized the preliminary results in total adrenalectomy on 12 patients with malignant hypertension and chronic nephritis.[33] There were four deaths. Six of the eight survivors were improved subjectively and objectively. Preoperative preparation consisted of a salt-free diet, diuretics, digitalization, and sedation. Cortisone (100 mg. intramuscularly) was given the night before operation and repeated in the morning prior to induction of anesthesia. During operation, which was performed in the prone position, 100 to 200 cc. of aqueous whole adrenal cortex extract and 20 to 50 mg. of phenylephrine (neo-synephrin®) hydrochloride were given by intravenous drip. Cortisone (50 mg. every six hours intramuscularly) was injected the first 48 hours postoperatively and gradually reduced to a daily maintenance dose of 37 to 25 mg. Later in convalescence, sodium chloride (3 gm.) was added to the diet with or without desoxycorticosterone acetate (1 mg. daily three to six times a week). Continuous spinal anesthesia was advocated as "safer," but intratracheally administered ether provided the best possible exposure.

Difficult as it is to predict the ultimate utility of adrenalectomy in the treatment of some disease states, evidently means are at hand in the form of hormonal replacement to make this type of surgery possible. Future experience is necessary before judgment can be passed on the wisdom of this kind of radical surgery as effective treatment for uncontrolled hypertension.

SUMMARY

The surgical and anesthetic problems incident to the operative treatment of patients with disorders of the adrenal gland are reviewed. The conditions considered are lesions producing hypofunction and hyperfunction of he adrenal cortex, hypersecretion of the adrenal medulla, and complete absence of adrenal activity.

The vital importance of replacement therapy in patients with hypofunction of the adrenal cortex prior to operation is demonstrated. This principle can be extended to those clinical situations in which hypofunction can be expected in the postoperative period (Cushing's syndrome and bilateral adrenalectomy). The value of aerograms for the localization of adrenal tumors is pointed out. The utility of electrolyte studies and the exploitation of autonomic drugs in the diagnosis of adrenal lesions is described.

Emphasis is placed on the avoidance of anesthetic agents and techniques that may regularly precipitate circulatory depression or are associated with the dangers of anoxia or asphyxia. Meticulous anesthetic management is considered of prime importance and the specific agents and techniques secondary. The uses of adrenal cortical extract, sodium chloride, autonomic blocking agents, and sympathomimetic pressor agents are described in the light of the physiological disturbances produced by the adrenal lesions under consideration. The factors pertaining to hormonal and drug therapy after operation in the various adrenal disorders are presented.

622 W. 168 St. (Dr. Papper).

---

[32] Huggins, C., and Scott, W. W.: Bilateral Adrenalectomy in Prostatic Cancer: Clinical Features and Urinary Excretion of 17-Ketosteroids and Estrogen, Ann. Surg. **122**: 1031-1041, 1945.

[33] Thorn, G. W.; Harrison, J. H., and Criscitiello, M. G.: A Study of Bilateral Adrenalectomy in Malignant Hypertension and Chronic Nephritis: Preliminary Report, unpublished data.

[34] Zintel, H. A.: Personal communication to the authors.

ANESTHESIA IN PEDIATRIC UROLOGY

Stevens J. Martin, M.D.
and
Thomas M. Feeney, M.D., Hartford, Conn.

During the past two decades, significant advances have been made in pediatric urology. While many difficulties have been resolved, the problem of a satisfactory and optimum anesthetic management still remains a challenge to some. Thus, published reports on uropediatric anesthesia are meager, limited to a few pediatric centers, and controversial in many respects.[1] In an attempt to clarify this problem, an analysis was made of the pertinent literature and the clinical experiences in the anesthetic management for pediatric urology.

A survey of the progress in anesthesia is of paramount importance to the urologist interested in pediatrics. It reveals several fundamental facts inadequately stressed and not fully appreciated clinically. To begin with, there is no ideal anesthetic agent and/or technique per se. All have their advantages, disadvantages, limitations, contraindications, and complications. Accordingly, for safe and optimum anesthesia, the anesthetic management for each operative procedure must be individualized. Secondly, there is no anesthesia that is singularly specific for uropediatric cases alone. A properly selected anesthetic management can be optimum for surgery other than urology. Lastly, from the anesthetist's point of view, the requirements of the urologist for his pediatric patient do not differ materially from those of other surgeons concerned with children. Thus, at one time or another, all geons desire for their younger patients analgesia, am- ia, or unconsciousness with muscular relaxation, con- l of adverse reflexes, and timely, adequate prophylaxis r therapeusis for anesthetic complications during surgery and the recovery period.

FUNDAMENTAL CONSIDERATIONS

It may be asked, logically, what has occurred during the past decade to facilitate the anesthesia in pediatric urology? Without question, the development of pediatric anesthesia, a specialty within a specialty, has contributed more to the safety and to the rational approach to anesthetic problems in the child than any other advance in anesthesia. The pioneer work of Ayres,[2] Leigh and Belton,[3] Stephen and Slater,[4] Robson,[5] and others,[6] in correlating the anatomy and physiology of the child and the anesthetic armamentarium of the anesthesiologist with th requirements of special surgical procedures, is now wel established. Few facts are of particular significance. To much emphasis cannot be given to the physiology of th central nervous system from infancy to late childhood During this age period, there is an alarming susceptibilit to hypoxia and asphyxia, an ever-changing and maturin pattern of pain perception and response, frequent unpre dictable effects of hypnotic, analgesic, and analepti agents, and last and of recent significance, the unappreci ated psychic trauma that may result from terrifyin operating room experiences.[8] Similarly, the respirator system in the infant-to-childhood group is anatomicall and physiologically different from that of the adult. Whil the pulmonary alveolar absorption surface area is greate in the younger group, the oxygen consumption per kilo gram body weight per minute is also greater, being almos twice that of the adult. Therefore, the oxygen require ments of the child are correspondingly higher. Th smaller glottic opening and diameter of the trachea ar more conducive to obstruction from mucous, blood, an foreign bodies. In infants, the respiratory center is un developed, unstable, and quite sensitive to variations i O_2 and CO_2 in the bloodstream and to somatic and vis ceral stimuli occurring normally or during surgery. Thus changes in the rate, tidal air, rhythm, and minute volum of respiration are common and are conducive to seriou disturbances in gaseous exchange. The ill-effects of in creased dead space and/or increased resistance to resp ration caused by improper anesthetic equipment fr quently are overlooked in pediatric anesthesia. Th cardiovascular system in the infant-child group similar shows variations of interest to the surgeon and anesthes ologist. The blood volume, blood velocity, cardiac outpu pulse rate, and circulation time decrease as age progre ses, while the blood pressure increases. Cardiovascul compensatory mechanisms are better developed in t older child and are more predictable in their response anesthetic and surgical reflex stimulation. Metabolic r quirements are more precise the younger the child, ma ing pre- and post-operative care of extreme importanc In short, the vital systems of the infant and the child a subject to more variations and imbalance than those the adult. Accordingly, they possess a narrower margin safety and do not tolerate anesthesia or surgery as we Both the surgery and anesthetic management must be e pecially well executed for optimum results. As Cam bell[1a] has said, "the anesthetic should be administered an expert anesthesiologist wherever possible."

From St. Francis Hospital.

Read in the Symposium on Preoperative Preparation, Anesthesia and Supportive Therapy for Urologic Operations before the Joint Meeting of the Sections on Anesthesiology and Urology, at the One Hundredth Annual Session of the American Medical Association, June 15, 1951.

[1] (*a*) Campbell, M. F.: Pediatric Urology, New York, The Macmillan Company, 1937, vol. 1, p. 88. (*b*) Clinical Pediatric Urology, Philadelphia, W. B. Saunders Company, 1951, pp. 77 and 880. (*c*) Dodson, A. I.: Urological Surgery, St. Louis, C. V. Mosby Company, 1944, p. 137. (*d*) Hinman, F.: The Principles and Practice of Urology, Philadelphia, W. B. Saunders Company, 1935. (*e*) Holly, J. D.: Intravenous Anesthesia in Children, South. M. J. **37**: 631, 1944.

[2] Ayres, P.: Endotracheal Anesthesia for Babies: With Special Reference to Harelip and Cleft Palate Operations, Current Res. in Anesth. & Analg. **16**: 330, 1937.

[3] (*a*) Leigh, M. D., and Belton, M. K.: Pediatric Anesthesia, New York, The Macmillan Company, 1948. (*b*) Belton, M. K., and Leigh, M. D.: Premedication in Pediatric Anesthesia, Current Res. in Anesth. & Analg. **29**: 68, 1950.

[4] (*a*) Stephen, C. R., and Slater, H. M.: Agents and Techniques Employed in Pediatric Anesthesia, Current Res. in Anesth. & Analg. **29**: 254, 1950. (*b*) Problems Encountered During Anesthetic Procedures for Children, Connecticut M. J. **13**: 709, 1949.

[5] Robson, C. H.: Anesthesia in Children, Am. J. Surg. **34**: 468, 1936.

[6] Smith, R. M.: Complications of Anesthesia in Pediatrics, Current Res. in Anesth. & Analg. **27**: 227, 1948.

[7] Deleted in proof.

[8] [illegible] Psychic Trauma of Operations, J. Pediat. **36**: 262, 1950.

ANESTHETIC MANAGEMENT

Modern anesthetic management consists of three phases: (1) preoperative evaluation, (2) anesthetic administration, and (3) postanesthetic care of the patient. The preoperative evaluation of the child, as in the case of the adult, begins the afternoon preceding surgery. This is particularly significant in pediatric cases not only because of the poor tolerance of anesthetic and surgical procedures but also because of the child's all too common fearful reaction to strange surroundings, hospital personnel, and routine. A kindly, sympathetic approach during the preoperative visit will minimize, if not eliminate, such apprehension. The child, seeing the same physician-anesthetist in the operating room, becomes more complacent and cooperative.

Several other features characterize the preoperative visit of the anesthesiologist. The physical status of the patient is ascertained from (1) the history—that of the chief complaint, previous illnesses, birth injuries, convulsive episodes, and similar data, from (2) the physical examination—the actual versus the physical age, normal versus actual weight, the presence of congenital defects, and the existence of dehydration, jaundice, edema, or other complications, and from (3) all laboratory data and x-ray studies. The detailed preparation of the patient the evening before surgery is then considered. It is customary for the urologist to prescribe the "surgical prep," enemas, omission of breakfast, and similar measures, while the anesthesiologist orders the hypnotic agent (elixir of phenobarbital, secobarbital [seconal®], or pentobarbital [nembutal®] in proper dosage), if necessary, to insure a restful sleep, and the preanesthetic medication. The literature reveals many preferences for preanesthetic medication. Campbell has favored phenobarbital, paregoric, morphine, or codeine sulfate in proper dosage.[1] The use of rectal tribromoethanol (avertin®) fluid [9] and intravenous hexobarbital (evipal®)[1] has also been mentioned. Schotz,[10] Weinstein and Light,[11] Burnap, Gain, and Watts,[12] and Mark, Fox and Burstein,[13] emphasize the advantages of rectal thiopental (pentothal®) sodium over the use of tribromoethanol fluid. Poe and Karp [14] feel that secobarbital administered rectally provides ideal basal anesthesia and should be employed for all children not amenable to reason or otherwise difficult to handle. In a comprehensive study by Leigh and Belton,[3] most of the commonly employed agents are discussed, with emphasis on the rationale of premedication, pharmacology of the agent, and the reasons for various preferences. For optimum premedication based mainly on weight and physical condition rather than on age,[15] they prefer secobarbital the night before surgery, morphine and scopolamine hydrobromide one hour before general anesthesia; or morphine, scopolamine, and secobarbital or pentobarbital one and one-half hours before regional anesthesia. Their elaborate table of dosages begins from birth and extends to 15 years of age.

The preanesthetic medication found most satisfactory, providing a depression just short of sleep, is that based on the patient's physical status (age, weight, and degree of mental excitability), the anesthetic management to be employed, and the surgery to be performed. The drugs and their dosage that are recommended are listed in the Table. With the variables to be considered, this is admittedly more a matter of experience and clinical judgment rather than of routine. Opiates are prescribed only when there is actual preanesthetic pain and never in infants less than 6 months of age. Hypnotics, such as pentobarbital or secobarbital, are favored in the absence of pain. To decrease secretions in the respiratory tract and to counteract adverse parasympathomimetic reflexes and, to a less extent, respiratory depression, scopolamine or atropine is added to the opiate or hypnotic agent. The latter two are given in slightly greater dosage if the child is unusually apprehensive, irritable, or if regional rather than general anesthesia is to be employed. On the contrary, the dosage of the opiate, hypnotic, and parasympatholytic agents should be decreased 25 to 50% for administration to underweight, chronically ill, or mentally depressed children.

*Dosage for Preanesthetic Medication in Children**

(Modification of Leigh and Belton [3])

		Opiate			Hypnotic		Parasympatholytic			
		Morphine			Nembutal®	Secobarbital	Scopolamine		Atropine	
Age	Weight in Lb.	Grain	Mg.	Demerol® Mg.	Grains	Mg.	Grain	Mg.	Grain	Mg.
0-6 mo...............	6-16	1/144	0.4	..	..	..	.....	...	1/450	0.1
6-12 mo...............	16-21	1/144	0.4	7	¼	16	.....	...	1/450	0.1
1-2 yr...............	21-28	1/96	0.6	10	⅜	24	1/600	0.1	1/400	0.16
2-3 yr...............	28-31	1/48	1.0	13	½	32	1/450	0.14	1/350	0.19
3-6 yr...............	31-45	1/36	1.4	20	¾	48	1/450	0.14	1/300	0.22
6-9 yr...............	45-60	1/24	1.8	37	¾	48	1/300	0.22	1/250	0.28
9-12 yr...............	60-85	1/24	2.7	50	1	60	1/250	0.29	1/200	0.33
12-14 yr...............	85-105	1/12	5.4	75	1½	90	1/200	0.33	1/150	0.5

* The doses as expressed in grains and milligrams are only approximate equivalents.

---

9. Bourne, W.: Avertin Anesthesia for Crippled Children, Canad. M. A. J. 35: 278, 1936.
10. Schotz, S.: Rectal Pentothal for Basal Narcosis in Infants: Report of Three Cases, Current Res. in Anesth. & Analg. 21: 295, 1942.
11. Weinstein, M. L., and Light, G. A.: Rectal Sodium Pentothal in 2,500 Anesthesias, Current Res. in Anesth. & Analg. 27: 343, 1948.
12. Burnap, R. W.; Gain, E. A., and Watts, E. H.: Basal Anaesthesia in Children Using Sodium Pentothal by Rectum, Anesthesiology 9: 524, 1948.
13. Mark, L. C.; Fox, J. L., and Burstein, C. L.: Preanesthetic Hypnosis with Rectal Pentothal in Children, Anesthesiology 10: 401, 1949.
14. Poe, M. F., and Karp, M.: Seconal as a Basal Anesthetic for Children, Current Res. in Anesth. & Analg. 27: 88, 1948.
15. Cullen, S. C.: Anesthesia in General Practice, Chicago, The Yearbook Publishers, Inc., 1946.

The final phase of the preoperative evaluation is concerned with the selection of the optimum anesthetic agent and technique. This must always be an individualized procedure based fundamentally on the patient's physical status and the urologic procedure to be performed. The requests of the urologist and of the patient (if made) are considered and carried out if there are no contraindications or if they do not significantly alter what is considered the optimum anesthetic management.

It has been our experience that urologic procedures in children are best performed under general rather than under regional anesthesia, particularly when the children are under 6 years of age. In all types of general anesthesia, the inhalation and intravenous routes are preferred. Children are naturally inquisitive, alert, and apprehensive. Under regional anesthesia, these attributes are magnified, and children become uncooperative, excitable, or combative unless excessively premedicated. In such circumstances, they do not tolerate anesthesia well. Thus, regional anesthesia is employed only when there are contraindications to the use of general anesthetic agents.

There appears to be no doubt that the most popular and still the safest inhalation agent is ether. It is used following ethyl chloride or preferably vinyl ether (vinethene®) induction with an open mask in infants and younger children or in older ones following a nitrous-oxide-oxygen induction in a closed system. Ether anesthesia is highly recommended for those urologic procedures that must be done without the aid of a physician-anesthetist. In institutions where a competent anesthesiologist is available, nitrous-oxide-oxygen, ethylene, trichlorethylene, cyclopropane, curare, or sodium pentothal with nitrous-oxide-oxygen can also be employed, depending on the presence of contraindications.[16] The authors have favored particularly the use of vinyl ether, cyclopropane, or thiopental sodium and nitrous-oxide-oxygen. Thiopental sodium (1 to 1.25%) with N_2O-O_2 (50:50) is reserved for cystoscopic procedures since this technique provides a quick induction and emergence and eliminates the explosive hazard while x-rays are being taken. Intravenous anesthesia, particularly in cystoscopic and transurethral procedures, in the young is encouraged by other groups.[1b]

It is not an uncommon experience to find one agent optimum for a procedure and another anesthesia considered equally so for the same procedure on the same or subsequent day owing to changes in the physical status of a child. It must be emphasized again that the selection of the anesthetic agent and technique is always individualized for each procedure and patient for optimum results. In all general anesthesias with the patient in the "kidney position," the use of the endotracheal tube with the Ayres or closed system techniques is highly recommended. This provides added ease and safety in the control of ventilation and depth of anesthesia. The following cases are presented to illustrate variations in anesthetic management.

REPORT OF CASES

CASE 1.—A Negro boy, aged 6 years, was admitted to the urologic service on Nov. 11, 1949, because of a diagnosis of bilateral hydronephrosis, malnutrition, marked anemia, and chronic tonsillitis. At 2 years of age, he had bilateral nep
tomies performed at another hospital. The following proce
were carried out during the next four months:

Nov. 20, 1949 Right ureteroneocystostomy and partial resectio
the ureter
Premedication: pentobarbital ¾ grain one
one-half hours before sur
and atropine 1/200 grain
half hour before surgery
Anesthesia: vinethene® induction, ether
dotracheal to and fro syst

Nov. 21, 1949 Cystoscopy
Same premedication
Anesthesia: thiopental sodium (1.25%—
nitrous-oxide-oxygen (50:50

Dec. 2, 1949 Nephrostomy on right side:
Same premedication and anesthesia as on
20, 1949

Jan. 3, 1950 Left Ureteroneocystostomy—Ureterotomy
Premedication: secobarbital ½ grain and
pine 1/200 grain one hou
fore surgery
Anesthesia: Cyclopropane endotrache
and fro anesthesia

Feb. 8, 1950 Cystoscopy
Same premedication and anesthesia as on
21, 1949

Feb. 17, 1950 Insertion of Ureteral Catheter
Premedication: atropine 1/200 grain one
before surgery
Anesthesia: cyclopropane

Mar. 14, 1950 Tonsillectomy and Appendectomy
Premedication: pentobarbital ½ grain an
ropine 1/200 grain one hou
fore surgery
Anesthesia: cyclopropane endotrache
and fro anesthesia

On March 22, 1950, the patient was discharged.

CASE 2.—A white male infant, 13 months old, was s
consultation on May 5, 1951, by the urology department b
of a complaint of abdominal swelling. Physical exami
suggested the possibility of a Wilms tumor on the right sid
following procedures were carried out:

May 5, 1951 10:30 a. m. Cystoscopy and Retrograde Pylo
Premedication: atropine 1/400 grain 30 minut
fore surgery
Anesthesia: *Thiopental sodium* (1.25%-5
nitrous-oxide-oxygen (50:50)

8:30 p. m. Removal of Wilms Tumor, right
Premedication: 1/400 grain atropine 30 minut
fore surgery
Anesthesia: Open drop vinethene® indu
ether insufflation thru endotra
tube (Ayre technique)

On May 18, 1951, the patient was discharged (remain
radiation therapy as outpatient). He has been in a satis
condition since then.

COMMENT

Many regional anesthetic techniques have been useful in pediatric urology.[1a,b] They have been po
ized in the past by various pediatric centers. Today
procedures are less commonly employed and, as
previously, are decidedly of second choice to u
procedures such as circumcisions, meatotomy, o
rection of hypospadias, local infiltration with 5 to
of a 0.2 to 0.5% procaine hydrochloride solutio
been found useful. Urethral instillations with 2 to

---

[16] Leigh and Belton.[3a] Stephen and Slater.[4a] Stephen, C. R., and Slater, H. M.: Newer Anaesthetic Agents in Children with Special Reference to Trichlorethylene and Kemithal, Anesthesiology 12: 135, 1951.

of a 2% procaine hydrochloride, 2 cc. of a 4% piperocaine (metycaine®) hydrochloride, or 6 cc. of diperodon (diothane®) solution for cystoscopy and retrograde pyelogram can be employed. For more extensive procedures, (suprapubic cystoscopy, nephrostomy, nephrectomy, and others), a paravertebral block with 1% procaine hydrochloride at 5 to 6 levels has been recommended. Campbell has reported 92% success in a series of 158 boys 4 years or older,[1] and 80% success in a series of 1,000 children,[17] using caudal or sacral block with 8 to 12 cc. of a 2% solution of procaine hydrochloride for cystoscopy or transurethral surgical treatment of posterior canal and bladder outlet. While no difficulties or complications were mentioned, Campbell emphasizes that "the majority of urologic operations in infants and children must be performed under general anesthesia," and that "as a rule, in children, a urologic operation which cannot be completed in 90 minutes should be done in multiple stages." These statements may be regarded as axiomatic today in view of the limited duration of the classic caudal block, its possible psychic trauma, and the greater appreciation of the child's limited tolerance to surgery as well as to anesthesia. Spinal anesthesia in children for major urology with 20 to 30 mg. of procaine hydrochloride in 1 cc. has also been suggested.[18] While this procedure offers the advantages of a regional technique with optimum muscular relaxation and minimal cerebral depression, it is believed that the possible psychic and somatic (cord) trauma, potential circulatory and respiratory disturbances, and limited duration do not justify the use of this method unless all types of general anesthesia are contraindicated. It is accordingly not commonly employed in children, particularly under 6 years of age.

Whatever anesthetic agent and technique are employed, the anesthesiologist must keep a constant vigil of the vital systems of the body. By recording blood pressure, pulse and respiratory rates, the depth and duration of anesthesia, the approximate blood loss during the progress of surgery and, in some instances, the rectal temperature, he becomes invaluable in instituting prophylactic or therapeutic measures to counteract aberrant reflexes or adverse changes in the vital systems of the body. No time need be lost to correct respiratory disturbances such as obstruction, cyanosis, hypoventilation, or apnoea, or cardiovascular changes such as vascular depression, peripheral vascular collapse, cardiac arrhythmia, or standstill. With a patent vein, fluid therapy as indicated, consisting of isotonic saline or dextrose, Hartmann's solution or whole blood, can be carefully administered. The trained anesthetist will lighten the general anesthesia as the surgeon completes his procedure so that the child will either be awake or will at least have active swallowing, gag, and cough reflexes. Finally, in conjunction with the surgeon, he will write postoperative orders to include (1) an analgesic to be administered every three or four hours, as needed, and when the patient is awake and actually in pain; (2) fluids as indicated; (3) oxygen by tent, mask, or nasal route; (4) antibiotics; and (5) bladder drainage and other procedures.

The anesthetic management logically concludes with prophylactic and therapeutic measures during the postoperative interval against complications due to anesthesia. Such interval begins with the emergence from anesthesia, requiring often several hours and extends for several days during the latent recovery period. Children should be particularly watched during emergence from anesthesia for (1) hypoventilation, (2) respiratory obstruction with asphyxia, cyanosis or dyspnoea from poor positioning in bed, excess secretions or sluggish return of swallowing and gag reflexes, (3) nausea, vomiting, and possible aspiration, (4) excessive excitement or convulsions, or (5) vascular depression and peripheral vascular collapse. The younger the child, the more meticulous the care be given during the critical emergence from anesthesia. In the latent recovery period, adequate measures should be taken by the urologist and his anesthetist to prevent or treat pulmonary atelectasis, pneumonia, abdominal distention, anuria, and other possible complications. Early ambulation and oral feedings, when possible, appear to be even more effective in facilitating convalescence in the child than in the adult. The interdependence, close cooperation, and mutual respect of the urologist and his anesthesiologist must be at their peak to make the practice of pediatric urology modern, safe, and sound.

SUMMARY

A satisfactory and optimum anesthetic management has been a major consideration in the progress of urologic surgery in children. An attempt was made in this presentation to correlate pertinent anesthetic and physiological factors in children and the requirements of urologic surgical techniques with the modern day concepts of anesthetic management. An evaluation of general and regional anesthesia is presented, based on published reports and personal clinical experiences. Recommendations for an optimum anesthetic management for various types of urologic surgery in children are emphasized.

114 Woodland St. (Dr. Martin).

[17] Campbell, M. F.: Caudal Anesthesia in Children, J. Urol. 30:245, 1933.

[18] Campbell,[1a] Leigh and Belton.[3a]

Growth of Urban Population.—For at least a century the urban population of the United States has been growing more rapidly than the rural. . . . The Census of 1920 was the first to show urban residents in the majority, but only by a slender margin of 51 per cent of the total population. By 1950, the proportion in urban areas had increased to 59 per cent; a century ago it was only 15 per cent. Migration from our farms and from foreign countries has kept our cities well supplied with people. Even in the second half of the last century, while there was a wide-spread movement to farms in the West and Midwest, the population in urban areas grew at a rate three times that in rural areas; in the present century the increase has been four times as fast. The population in our larger cities has shown the most rapid rate of growth. . . . The proportion of our population in cities with 100,000 or more has grown from 5 per cent in 1850 to 19 per cent in 1900. Since then, internal migration as well as the continuing stream of immigrants from abroad have brought the proportion of the total population in such cities to 29 per cent. Meanwhile, the number of cities with 100,000 or more inhabitants rose from 6 in 1850 to 106 at present.—Rapid Growth of Urban Population, *Statistical Bulletin, Metropolitan Life Insurance Company*, September, 1951.

The final phase of the preoperative evaluation is concerned with the selection of the optimum anesthetic agent and technique. This must always be an individualized procedure based fundamentally on the patient's physical status and the urologic procedure to be performed. The requests of the urologist and of the patient (if made) are considered and carried out if there are no contraindications or if they do not significantly alter what is considered the optimum anesthetic management.

It has been our experience that urologic procedures in children are best performed under general rather than under regional anesthesia, particularly when the children are under 6 years of age. In all types of general anesthesia, the inhalation and intravenous routes are preferred. Children are naturally inquisitive, alert, and apprehensive. Under regional anesthesia, these attributes are magnified, and children become uncooperative, excitable, or combative unless excessively premedicated. In such circumstances, they do not tolerate anesthesia well. Thus, regional anesthesia is employed only when there are contraindications to the use of general anesthetic agents.

There appears to be no doubt that the most popular and still the safest inhalation agent is ether. It is used following ethyl chloride or preferably vinyl ether (vinethene®) induction with an open mask in infants and younger children or in older ones following a nitrous-oxide-oxygen induction in a closed system. Ether anesthesia is highly recommended for those urologic procedures that must be done without the aid of a physician-anesthetist. In institutions where a competent anesthesiologist is available, nitrous-oxide-oxygen, ethylene, trichlorethylene, cyclopropane, curare, or sodium pentothal with nitrous-oxide-oxygen can also be employed, depending on the presence of contraindications.[16] The authors ave favored particularly the use of vinyl ether, cyclopropane, or thiopental sodium and nitrous-oxide-oxygen. Thiopental sodium (1 to 1.25%) with N_2O-O_2 (50:50) is reserved for cystoscopic procedures since this technique provides a quick induction and emergence and eliminates the explosive hazard while x-rays are being taken. Intravenous anesthesia, particularly in cystoscopic and transurethral procedures, in the young is encouraged by other groups.[1b]

It is not an uncommon experience to find one agent optimum for a procedure and another anesthesia considered equally so for the same procedure on the same or subsequent day owing to changes in the physical status of a child. It must be emphasized again that the selection of the anesthetic agent and technique is always individualized for each procedure and patient for optimum results. In all general anesthesias with the patient in the "kidney position," the use of the endotracheal tube with the Ayres or closed system techniques is highly recommended. This provides added ease and safety in the control of ventilation and depth of anesthesia. The following cases are presented to illustrate variations in anesthetic management.

REPORT OF CASES

CASE 1.—A Negro boy, aged 6 years, was admitted to the urologic service on Nov. 11, 1949, because of a diagnosis of bilateral hydronephrosis, malnutrition, marked anemia, and chronic tonsillitis. At 2 years of age, he had bilateral nep tomies performed at another hospital. The following proced were carried out during the next four months:

Nov. 20, 1949 Right ureteroneocystostomy and partial resection of the ureter

Premedication: pentobarbital ¾ grain one and one-half hours before surgery and atropine 1/200 grain one half hour before surgery

Anesthesia: vinethene® induction, ether en dotracheal to and fro system

Nov. 21, 1949 Cystoscopy

Same premedication

Anesthesia: thiopental sodium (1.25%—6 cc.) nitrous-oxide-oxygen (50:50)

Dec. 2, 1949 Nephrostomy on right side:

Same premedication and anesthesia as on Nov 20, 1949

Jan. 3, 1950 Left Ureteroneocystostomy—Ureterotomy

Premedication: secobarbital ½ grain and atro pine 1/200 grain one hour be fore surgery

Anesthesia: Cyclopropane endotracheal t and fro anesthesia

Feb. 8, 1950 Cystoscopy

Same premedication and anesthesia as on Nov 21, 1949

Feb. 17, 1950 Insertion of Ureteral Catheter

Premedication: atropine 1/200 grain one hou before surgery

Anesthesia: cyclopropane

Mar. 14, 1950 Tonsillectomy and Appendectomy

Premedication: pentobarbital ½ grain and a ropine 1/200 grain one hour b fore surgery

Anesthesia: cyclopropane endotracheal t and fro anesthesia

On March 22, 1950, the patient was discharged.

CASE 2.—A white male infant, 13 months old, was seen consultation on May 5, 1951, by the urology department beca of a complaint of abdominal swelling. Physical examinat suggested the possibility of a Wilms tumor on the right side. following procedures were carried out:

May 5, 1951 10:30 a. m. Cystoscopy and Retrograde Pylorgra

Premedication: atropine 1/400 grain 30 minutes b fore surgery

Anesthesia: Thiopental sodium (1.25%-5 cc. nitrous-oxide-oxygen (50:50)

8:30 p. m. Removal of Wilms Tumor, right s

Premedication: 1/400 grain atropine 30 minutes b fore surgery

Anesthesia: Open drop vinethene® inductio ether insufflation thru endotrache tube (Ayre technique)

On May 18, 1951, the patient was discharged (remainin radiation therapy as outpatient). He has been in a satisfac condition since then.

COMMENT

Many regional anesthetic techniques have been fo useful in pediatric urology.[1a,b] They have been popu ized in the past by various pediatric centers. Today, s procedures are less commonly employed and, as st previously, are decidedly of second choice to us. procedures such as circumcisions, meatotomy, or rection of hypospadias, local infiltration with 5 to 30 of a 0.2 to 0.5% procaine hydrochloride solution been found useful. Urethral instillations with 2 to 4

---

[16] Leigh and Belton.[3a] Stephen and Slater.[4a] Stephen, C. R., and Slater, H. M.: Newer Anaesthetic Agents in Children with Special Reference to Trichlorethylene and Kemithal, Anesthesiology 12: 135, 1951.

Aged persons not infrequently show the effects of ironic malnutrition which—added to the handicap of ieir age and to any chronic disease which they may ave of the cardiovascular, respiratory, renal, or other ystems—markedly reduces their ability to withstand ological—or any other—surgery. Sometimes this malutrition is due to poverty, but often it is due to lack of petite, apathy, or ignorance of the proper diet and its nportance. In addition, personal likes and dislikes of rtain foods often play a part. Also not infrequently fective or absent teeth or poorly fitting artificial denires prevent patients from taking foods requiring much iewing—meat in particular. Failure to eat meat is espeally undesirable in view of the fact that protein foods, pecially meat, in addition to furnishing a lot of the tamin B complex and minerals to the diet play a major le in maintaining plasma proteins, which is particurly important during disease, wound healing, and conilescence. Under conditions of trauma, infection, and ver and after operations the breakdown of protein tisie is excessive and may be two or three times the ormal. If at the same time there is an inadequate dietary itake of protein, a lowered serum protein will result. his protein depletion is commonly accompanied by lema and by anemia. In addition, weight loss occurs, nd with it reduction of blood volume. Patients in such ondition tolerate surgery poorly, are vulnerable to iock, and have a difficult convalescence. Also, it is ifficult to maintain fluid and electrolyte balance in the resence of diminished plasma protein. Another phase of ialnutrition is vitamin deficiency. Probably the most nportant vitamin for the aged is vitamin B complex—nd also ascorbic acid in view of its known effect on the ealing of wounds.

These various nutritional deficiencies—low plasma rotein, anemia, edema, reduction in blood volume, loss f weight, and avitaminosis—should be corrected as nuch as possible, and at least brought out of the acute tage, before operation, unless an acute emergency xists, and should also be treated after operation and luring convalescence. Vitamin deficiencies can be remdied by the administration of large amounts of all he vitamins, especially vitamin B complex and ascorbic cid (orally if possible, but if not, parenterally). Plasma rotein can slowly be raised by the administration of a iigh protein diet orally. However, it may be impossible or the patient to take in his diet the desired 100 gm. of rotein daily (which can be visualized as the amount ontained in 4 fillets of beef or 3½ qt. [3,500 cc.] of nilk or 17 eggs), and the desired amount can probably nore readily be got into the patient orally by supplenentary feeding with one of the commercial protein iydrolysates, which are usually also fortified with vitanins, minerals, and carbohydrates. This procedure may e all right when there is no hurry or during convalesence after an operation, but usually when a patient is eing prepared for surgery time is of the essence, so hat the more rapid raising of the plasma protein by arenteral injection is resorted to. Transfusions of whole lood raise not only the serum protein but also the hemolobin and blood volume, as well as supplying minerals, otassium, and vitamins. In almost all instances this is undoubtedly the therapy of choice in my opinion. Blood plasma is expensive, does not contain the red cells and other beneficial qualities of whole blood, and is no longer used much in this connection.

Since proteins are absorbed into the body as amino acids, intravenous administration of amino acid mixtures (which are available commercially and also relatively inexpensive) is an excellent way of bolstering the plasma protein, either preoperatively or postoperatively. Goodly amounts of water should be administered with the amino acids to assist their synthesis into protoplasm, and dextrose should be added to aid in their utilization and to spare them for tissue building.

The level of prothrombin in the plasma may be decreased in cases of severe malnutrition with vitamin K deficiency, creating a tendency to abnormal bleeding. The prothrombin time should always be checked in elderly persons before operation. If it is deficient, this can be remedied by the administration of vitamin K.

The psysiological processes involved in dehydration, acidosis and alkalosis, and depletion of body electrolytes are inter-related and are very complex. Their management may play a very important part in the preoperative and postoperative course of elderly patients. The limited time permitted for delivery of this paper allows for only the briefest, oversimplified presentation of these processes.

Dehydration may occur from the failure to restore by ingesting fluid the normal water loss of the body from the lungs, skin, and kidneys. This may be due to nausea, dysphagia, weakness, or impairment of mental status. Dehydration occurs more commonly and more rapidly from the failure to restore abnormal and excessive water loss due to fever, perspiration, and vomiting (as is sometimes seen in acute pyelonephritis), to vomiting from other causes, or to severe diarrhea. Along with the body fluids, electrolytes are lost, notably sodium chloride and potassium. As dehydration progresses renal function is impaired with retention of acid catabolites, which results in acidosis and a decreased carbon dioxide content of the serum. The blood volume decreases with a rise in hematocrit reading. Clinically the patient presents the picture of weight loss, thirst, dryness of tongue and skin, and a scanty output of concentrated urine. If there is acidosis of considerable degree, hyperpnea or hyperventilation will occur, and the patient may be drowsy, apathetic, and confused.

Sodium is the main alkaline or basic constituent of blood plasma, whereas, chloride is the main acid constituent, and acidosis occurs when there is loss of sodium (base) out of proportion to the loss of chloride (acid). Acidosis is likely to follow a case of serious diarrhea, since there is a greater loss in diarrheal stools of sodium and other bases than there is of chloride and other acids. Now isotonic sodium chloride solution has one and one-half times as much chloride as has plasma, and therefore its administration in case of dehydration with acidosis would raise the level of the already predominating acid chloride and thus make the acidosis worse. However, it has been found that the intravenous administration of 1 part of 1/7 molar sodium bicarbonate solution in 2 parts of 5% dextrose in isotonic sodium chloride solution decreases the chloride and tends to correct the acidosis and dehydration. One-seventh molar sodium lactate solution is just as good as the 1/7 molar sodium bicarbonate solution.

In cases of dehydration due to vomiting the situation is reversed, and there is a greater loss of acid chloride from the stomach than there is of basic sodium, with a resulting tendency to alkalosis. This can be detected by lowered serum chloride and increased carbon dioxide content of the serum. In this condition the intravenous administration of isotonic sodium chloride solution, with 5% dextrose solution to help bodily maintenance requirements, increases the diminished chloride back toward normal. Care must be taken not to carry the administration of isotonic sodium chloride solution too far; the daily sodium chloride need of an adult is satisfied by 700 cc. or less of sodium chloride solution, and the administration of an excess may result in fluid retention and a urine output which is extremely small relative to the amount of fluid intake. Thus it can be seen that it is important to recognize the difference between dehydration with acidosis and dehydration with alkalosis, since the treatment is different.

It is obvious that renal function is very important in these processes. Normally functioning kidneys are able to conserve the sodium, chloride, and bicarbonate of the body in balance under usual circumstances, but in cases of renal disease when the kidneys cannot conserve sodium and chloride, these may become depleted. And in cases of renal disturbances in which there is loss of the mechanism for conserving base or in which there is retention of the mineral acids (phosphate and sulfate), acidosis, as already described, may occur.

In the treatment of cases of dehydration with acidosis or alkalosis and of changes in, or depletion of the electrolytes, laboratory studies are essential unless the treatment is to be "hit or miss"—and very possibly "miss." Estimations of the serum chloride, carbon dioxide content of the plasma, hemoglobin and hematocrit reading, and nonprotein nitrogen and serum protein are guideposts without which the proper treatment is difficult.

Unlike sodium, which constitutes most of the basic factor in extracellular fluid (blood and interstitial fluid), there is very little potassium in the extracellular fluid, although it forms the chief basic constituent of cell fluid. Therefore, measurement of the potassium in extracellular fluid, as blood, does not necessarily reflect accurately the status of the majority of the potassium which is in the cells. Both hypopotassemia and hyperpotassemia produce a characteristic abnormality on the electrocardiogram, which may thus be used as a diagnostic aid in cases of these conditions.

It has been found that potassium depletion occurs under the conditions of dehydration, salt depletion, and acidosis just described and also in association with protein catabolism and after surgery when patients are taking little by mouth and are receiving potassium-free parenteral fluids. Therefore, in such cases it is deemed important to administer supplementary parenteral potassium in the form of special potassium salts which are added to the intravenous fluids the patient is receiving.

Since it is difficult for parenteral fluids to supply all the various minerals, such as magnesium and phosphate, lost by these depleted patients which are essential t normal intracellular metabolism, it is important to gi as much oral feeding as possible as soon as this can b accomplished without nausea or diarrhea. In those p tients who will not or cannot ingest nourishment, often small rubber or polyvinyl tube is passed through t nostril into the stomach, fixed in position by adhesi taping to the nose and cheek, and used for frequent fee ings of protein hydrolysates or dietary mixtures high calories, protein, carbohydrate, fat, vitamins, and mi erals, such as calcium, phosphorus and iron. For e ample, the so-called McLean feeding contains all th elements and supplies 1,850 calories in 1,500 cc. fluid. Recently, in patients who have not been able take nourishment by stomach and in whom it was the fore necessary to maintain nutritional status chiefly parenteral routes, intravenous administration of em sions of fats to supply calories and spare protein h been tried and successful results reported.

The choice of an anesthetic is not within the provi of this paper, and also in this Joint Meeting with t Section on Anesthesiology I would not dare to do a thing but keep a discreet silence. However, no mat what anesthetic is used, the patient should be kept w oxygenated during the procedure. The surgeon and anesthetist should cooperate in using blood transfusi liberally in order to keep well ahead of blood loss a thus try to prevent the patient ever suffering shock. U compensated blood loss and inadequate oxygenat may lead to hypotension and shock, which are tolera poorly by aged patients and may lead to thromb and infarction or embolism.

As for the surgery itself, the elderly are particula intolerant of trauma, and the surgery should be d as atraumatically and expeditiously as possible. Since tissues may be sluggish in healing, suturing should careful and thorough, and skin sutures should not removed too early.

In the immediate postoperative period support therapy, especially blood and oxygen, should be m than adequate. The same factors which were import in preparing the patient for operation are equally imp tant in the postoperative period—attention to orga weaknesses, dehydration, acidosis and electrolyte b ance, and nutrition and vitamins.

Recently, both in the preoperative preparation especially in the postoperative management of debilita patients, the addition of a small amount (60 cc.) of p alcohol to each 1,000 cc. of parenteral fluid being ministered has been advocated and practiced by so The alcohol adds to the patient's sense of well-being, in the postoperative period has a slight sedative analgesic action so that less morphine is necessary addition, it tends to help maintain positive nitrogen ance, since the readily available calories derived from alcohol provide a certain amount of energy which therefore, not have to be obtained from the body reser

In persons with normal adrenals the injection single dose of corticotropin (ACTH) produces a found drop in the number of eosinophils in the bl due to the action of the stimulated adrenal cortex. H ever, if the adrenal cortex is functioning poorly, t ill be little or no effect on the number of eosinophils. ı aged patients who are “doing badly” in general after peration and seem to be “going to pieces,” if the cor- cotropin test indicates poor function of the adrenal rtex substitution therapy in the form of administration “cortisone” (adrenal cortical extract) has sometimes roduced striking improvement in the patient's general ndition. Therapy must be continued for some days or nger until the patient's general condition is good. At at time the dosage is very gradually cut down over the urse of days so that the adrenal cortex will gradually stimulated to resume functioning.

It is very important for the aged patient to get out of d beginning the day after operation or even the after- oon after operation, if possible. This is done no matter hat the operation was (unless the patient is in shock), nd it is necessary to have plenty of assistance to help pport the patient at first. It has been found that early ambulation helps prevent postoperative complications, such as pneumonia, phlebothrombosis, and emboli. Psychologically these patients are tired and discouraged and need a lot of encouragement. Also, I have found that it does more harm than good to try too hard to change habits or customs of many years standing during the few weeks the patient is in the hospital, no matter how illogical or undesirable they may seem.

In conclusion, I would reiterate that the aged often present serious problems when undergoing surgery—urological or otherwise. However, despite these handicaps—with attention to their chronic diseases, nutrition, and water and electrolyte balance and aided by modern therapy, modern methods of anesthesia, and especially the liberal use of whole blood, the vast majority of these patients can be brought through major urological surgery satisfactorily.

203 Commonwealth Ave.

INFILTRATING CARCINOMA OF THE BLADDER

RELATION OF EARLY DIAGNOSIS TO FIVE-YEAR SURVIVAL RATE AFTER COMPLETE EXTIRPATION

Hugh J. Jewett, M.D., Baltimore

A recent study[1] of 80 cases of carcinoma of the rinary bladder was made in order to determine the nfluence of the depth of mural infiltration on the five- ear results following complete extirpation of the pri- nary growth. Thirty-nine patients subjected to simple ystectomy and 41 to segmental resection (partial cystec- omy) prior to Feb. 1, 1946, survived operation. Of 9 patients with tumors infiltrating less than halfway hrough the muscularis, 14 (74%) lived 5 to 14 years vithout evidence of recurrence or metastasis, whereas nly 2 of 61 patients (3%) with deeply invading tumors urvived 5 years (Table 1). Moreover, only 10% of the atients with superficially infiltrating tumors died with vidence of extension of their vesical cancer, as compared with 85% of the patients with deep tumors.

The histologic pattern and degree of cellular differentiation of each tumor, although indicating the potentiality of that tumor for rapid growth and metastasis, were found to exert somewhat less influence on the survival rate than the extent to which the growth had invaded the bladder wall. However, it was pointed out that 54% of the deeply infiltrating tumors were highly malignant, as compared with 37% of the superficially infiltrating tumors. This was attributed to the fact that highly malignant tumors grow more rapidly and consequently are more likely to reach the deeper layers of the bladder wall before the diagnosis is made.

The present study, therefore, concerned the relation of early diagnosis to the depth of mural invasion and thus to the five-year survival rate after extirpation of the primary growth. Since the diagnosis, as a rule, is made only after cystoscopy, and cystoscopy is performed usually only after the onset of certain symptoms, the first objective was to determine the nature and duration of the symptoms which led to the diagnosis.

Of the original 80 patients on whom the previous report was based, 73 had symptoms attributable to the vesical neoplasm. Of the 7 patients eliminated from the series, two had urinary symptoms unrelated to their tumors; in one of these patients cystoscopy was performed because of a coincidental obstruction at the vesical neck and in the other because of a vesical diverticulum. In the remaining five cases the clinical history was not sufficiently detailed to permit inclusion.

The following series, therefore, consists of 14 cases with infiltration extending less than halfway through the muscularis, and 59 cases with infiltration extending halfway through or more. Hematuria and some form of vesical irritability (frequency, urgency, pain, burning on urination, or tenesmus) were the cardinal symptoms; these occurred singly or in combination in all cases (Table 2). In the total group of 73 cases gross hematuria was a complaint in 65; in 7 it was a terminal symptom and in 2 an initial symptom. In six additional cases microscopic hematuria was found on urinalysis, so that in 71 of 73 cases erythrocytes were present in the urine. Vesical irritability was a complaint in 55 cases, although infected urine was reported in only 17 and residual urine, averaging less than 2 oz. (60 cc.) in only 22. Four patients complained of difficulty of urination, three of pains in the rectum, hypogastrium, or bladder, and one of hematospermia, which probably was coincidental.

The histologic classification of the tumors included papillary, epidermoid, and undifferentiated carcinoma,

---

From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.

Read in the Symposium on Preoperative Preparation, Anesthesia and Supportive Therapy for Urologic Operations before the Joint Meeting of the Sections on Anesthesiology and Urology, at the One Hundredth Annual Session of the American Medical Association, June 15, 1951.

[1] Jewett, H. J.: Carcinoma of Bladder: Influence of Depth of Infiltration on the Five-Year Results Following Complete Extirpation of the Primary Growth, J. Urol., to be published.

adenocarcinoma, and mucus-forming adenocarcinoma. In the papillary and epidermoid groups well-differentiated, moderately differentiated, and poorly differentiated types were recognized.

In the accompanying chart the average duration of symptoms prior to operation has been determined for each type of tumor, and the results in cases with superficially infiltrating and with deeply infiltrating tumors are compared. Although the number of cases with superficially infiltrating tumors is too small to permit final conclusions, the curves of the duration of symptoms suggest that patients with deeply infiltrating tumors, for the most part, have symptoms for a considerably longer period than those with superficial tumors. In a larger series of cases it would be desirable to ascertain for each type of tumor the longest duration of symptoms compatible with infiltration less than halfway through the muscularis.

Furthermore, it should not be concluded from these curves that patients with deeply infiltrating tumors always have had their symptoms for a much longer period than patients with superficial tumors. These curves merely represent the average duration of symptoms, and in each histologic category there was at least one patient with a deeply infiltrating tumor whose symptoms had been present for a shorter period than is represented by the curve for the group with superficial tumors. Moreover, two cases were eliminated from this series because the symptoms leading to cystoscopy were not attributable to the tumors, which were discovered accidentally.

The curves, however, seem to indicate that a patient with a deeply infiltrating tumor, although occasionally having no symptoms at all or symptoms of very short duration, generally will complain of hematuria or vesical irritability extending over several months. A patient whose symptoms have been present only for several weeks is apt to have a superficial tumor. This, however, is less likely to be true in cases of epidermoid and undiffer-entiated carcinoma and adenocarcinoma. It should b borne in mind that the symptoms are not necessarily continuous. Their duration as recorded here is measured from the date of the first appearance of the symptoms, which may have disappeared promptly, only to recur a year or more later. This is especially true of hematuria, the degree of which is not a reliable indication of th magnitude of the tumor.

When the diagnosis is made late in the course of th disease, generally because significant symptoms hav been disregarded for a period of time, the tumor usuall will be deeply infiltrating. As previously pointed out, th five-year survival rate following simple cystectomy o segmental resection for tumors of this sort is about 3% The more formidable procedures, such as radical cystec tomy with resection of the lymphatic drainage area o perhaps pelvic exenteration, eventually may salvage somewhat higher percentage of the cases in this grou but this is not certain since the survival rate with thes procedures has not yet been determined. These opera tions furthermore may be found to result in a hig incidence of postoperative disability. At present littl can be offered the patient with a deeply infiltrating tumo other than a certain degree of temporary palliation or a extensive pelvic dissection of unknown efficacy.

When the diagnosis is made early as the result of earl occurrence of symptoms leading to prompt cystoscop examination, the tumor in most instances, if infiltratin at all, will be superficial. The five-year survival rate i this superficially infiltrating group is 74% followin complete extirpation of the local growth. This figu probably can be increased still more by improveme in technics, especially since only 10% of the patien in this group died with evidence of extension of t vesical cancer.

The reasonably good prognosis associated with sup ficial tumors, in contrast to the very poor progno afforded by deep tumors, should emphasize to the gene public, the general practitioner, and the specialist t vital importance to the patient of immediate evaluati of the cause of hematuria or vesical irritability. In rega to the specialist, it is suggested that the treatment us be designed to result in immediate eradication of t

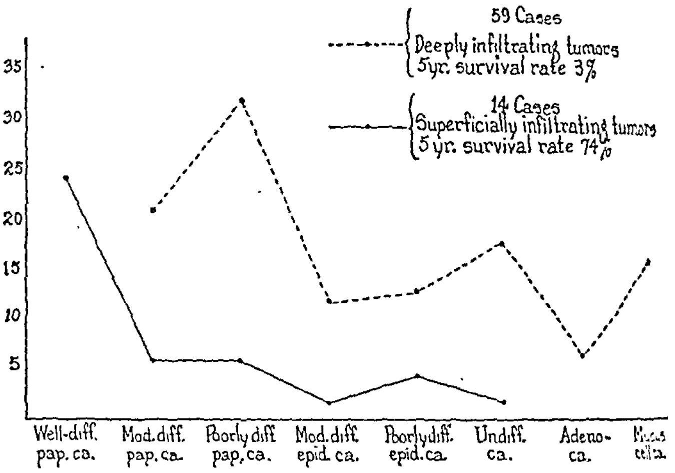
Table 1.—*Relation of Depth of Infiltration of Carcinoma of Bladder to Five-Year Survival Rate After Complete Extirpation*

Depth of Infiltration	No. of Patients	No. Living 5-14 Yr. Without Tumor
Submucosal (Group A)	14	10
Superficial muscular (Group B1) *	5	4
Total superficial infiltration	19	14
Deep muscular (Group B2) †	13	1
Perivesical (Group C)	48	1
Total deep infiltration	61	2

---

* Group B1 represents infiltration less than halfway through the muscularis.

† Group B2 represents infiltration halfway or more through the muscularis.



The average duration in months of symptoms from tumors of each type has been determined. Note the longer average duration of sympto in the cases with deeply infiltrating tumors.

Table 2.—*Incidence of Gross and Occult Hematuria and Vesical Irritability in Seventy-Three Cases of Infiltrating Carcinoma of Bladder*

	No. of Cases	Hematuria		Vesical Irritability
		Gross	Occult	
With superficial infiltration	14	12 *	2	7
With deep infiltration	59	53 †	4	48
Total	73	71		55

---

* In three cases hematuria occurred at the end of urination, and in two cases at the beginning of urination.

† In four cases hematuria occurred at the end of urination.

primary growth. This should be done either by complete ocal destruction or by extirpation so that superficial umor cells will not be permitted to reach eventually he deeper layers of the bladder wall.

CONCLUSIONS

Often hematuria or vesical irritability of some degree makes its first appearance while the vesical tumor, if nfiltrating at all, is still superficial. In such a case immediate cystoscopic examination after the onset of these symptoms makes possible an early diagnosis. Complete extirpation of this superficially infiltrating tumor results in a five-year survival rate of 74%. Late or neglected symptoms or inadequate treatment after early diagnosis permit the inevitable infiltration of the tumor cells into the deep layers of the bladder wall, and complete extirpation then provides a five-year survival rate of only 3%.

1201 N. Calvert St.

UNRECOGNIZED PITUITARY NECROSIS (SHEEHAN'S SYNDROME)

A CAUSE OF SUDDEN DEATH

S. Leon Israel, M.D.
and
Alfred S. Conston, M.D., Philadelphia

The clear relationship between a destructive lesion of he anterior portion of the hypophysis and the striking eficiency syndrome associated with it was first described y Simmonds, who attributed the ischemic necrosis to n infarct resulting from minute bacterial emboli lodging n the sinuses of the gland.[1] It was subsequently suggested by Reye that thrombosis of the small sinuses of he anterior lobe of the pituitary could result in necrosis, nd that sudden hypotension would favor its occurrence.[2] He also pointed out that the enlarged pituitary of pregnancy and the hypotension resulting from severe postpartum hemorrhage would be an especially predisposing ombination of circumstances for such thrombosis.[3] The atter suggestion was factually supported by the observaions of several pathologists who noted the association f pituitary necrosis and postpartum hemorrhage.[4] However, the clinical importance of the relationship of postpartum hemorrhage to pituitary necrosis was not clearly nderstood until the revealing studies of Sheehan.[5] He ot only reported the frequent occurrence of pituitary necrosis in women dying late in the puerperium after a lifficult labor (one usually complicated by placental reention or postpartum hemorrhage) but he also demonstrated small thrombi in the sinuses of the anterior hypophysis.[6] Sheehan [7] believes that "at a normal delivery there is presumably a physiological reduction of the blood-flow to the anterior lobe; if in addition to this there is a severe general circulatory collapse, it is possible that the blood flow to the anterior lobe may be so reduced that thrombosis occurs in the vessels of the lobe and *leads to ischaemic necrosis.*" Sheehan not only emphasizes the importance of severe postpartum hemorrhage in the pathogenesis of the ischemic necrosis, but also stresses the fact that this lesion is always associated with the end of a term pregnancy. There is as yet no recorded instance occurring during the course of a pregnancy. It is also interesting that in nonpregnant patients pituitary necrosis does not develop as a result of shock or hemorrhage, although it is occasionally encountered in diabetics.[8]

The necrosis of the anterior lobe of the pituitary following on postpartum hemorrhage develops slowly, requiring approximately two weeks.[6] The fresh lesion is never the cause of an immediate postpartum death. The symptoms of such a necrosis do not appear in a clinical sense until at least six months have passed and may require several years to develop, depending on the degree of destruction of the gland. It has been shown experimentally that it requires destruction of at least 70% of the anterior lobe in order to evoke the typical pattern of chronic hypophysial deficiency.[9] There must, however, be a wide individual variation, because there are several reported instances of extensive pituitary necrosis found in patients at postmortem who had not suffered obvious symptoms of pituitary deficiency during life.[10] There is, nevertheless, a correlation between the symptomatology and the severity of the tissue destruction. The varying involvement of the three cell-types (basophil, acidophil,

---

From the Departments of Gynecology and Pathology, Mount Sinai Hospital.

Read before the Section on Obstetrics and Gynecology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

[1] Simmonds, M.: Ueber embolische Prozesse in der Hypophysis, Arch. path. Anat. **217**: 226, 1914.

[2] Reye, E.: Das klinische Bild der Simmondsschen Krankheit (hypophysäre Kachexie) in ihren Anfangsstadium und ihre Behandlung, München. med. Wchnschr. **73**: 902, 1926.

[3] Reye, E.: Die ersten klinischen Symptoms bei Schwund des Hypophysenvorderlappens (Simmondssche Krankheit) und ihre erfolgreiche Behandlung, Deutsch. med. Wchnschr. **54**: 696, 1928.

[4] Suchier, W.: Klinisches zur Simmondsschen Krankheit (hypophysäre Kachexie), München. med. Wchnschr. **74**: 1795, 1927. Knauer, G. A.: Ueber zwei abortive Fälle von Hypophysenerkrankungen, Zentralbl. allg. Path. **42**: 1, 1928. Reiche, F.: Zur klinischen Diagnose des Hypophysisschwundes, Med. Klin. **14**: 984, 1918.

[5] Sheehan, H. L.: Post-Partum Necrosis of Anterior Pituitary, J. Path. & Bact. **45**: 189, 1937.

[6] Sheehan, H. L., and Murdoch, R.: Post-Partum Necrosis of Anterior Pituitary: Pathological and Clinical Aspects, J. Obst. & Gynaec. Brit. Emp. **45**: 456, 1938.

[7] Sheehan, H. L.: Simmonds' Disease Due to Post-Partum Necrosis of Anterior Pituitary, Quart. J. Med. **8**: 277, 1939.

[8] Kraus, E. J.: Hypophyse und Diabetes mellitus, Arch. path. Anat. **228**: 68, 1920. Baló, J.: Ueber Nekrosen des Hypophysenvorderlappens und ihre Folgen, Beitr. Path. Anat. **72**: 599, 1923-1924. Kiyono, H.: Die Histopathologie der Hypophyse, Arch. path. Anat. **262**: 149, 1926.

[9] Smith, P. E.: Secretory Capacity of Anterior Hypophysis as Evidenced by Effect of Partial Hypophysectomies in Rats, Anat. Rec. **52**: 191, 1932.

[10] Krumbhaar, E. B.: Pituitary Disorders in Their Relation to Acromegaly (Hyper-Pre-Pituitarism) with Suggestions for the Use of a More Precise Terminology, Arch. Diagnosis **14**: 213, 1922. Worms, G., and Delater, G.: Total Destruction of Pituitary by Extended Nasopharyngeal Lymphosarcoma, Without Pituitary Insufficiency Syndrome, Rev. Neurol. **2**: 361, 1925. Costello, R. T.: Subclinical Adenoma of Pituitary Gland, Am. J. Path. **12**: 205, 1936.

and chromophobe) may also be of importance in determining the symptoms.[11] If the anterior lobe is completely replaced by necrosis, except for a capsule-like remnant of normal cells surrounding the lesion, full-blown Simmonds' disease would eventuate. Such a patient would exhibit symptoms resulting from deficiency of all the hormones produced by the anterior lobe of the hypophysis, namely, the lactogenic, gonadotrophic, adrenotrophic, thyrotrophic, and the growth hormones (Table 1). These extreme instances are not germane to this report; they have been recently reviewed in extensive surveys of the subject.[12] On the other hand, the lesion that does not completely destroy the anterior lobe, leaving some 10 or 15% of normal glandular elements, may not give rise to notable symptoms. In such circumstances, it is possible for the patient to live and to carry on bodily functions on a slightly subclinical level without apparent signs of Simmonds' disease. On close observation, however, it is possible to detect certain signposts of adrenocortical insufficiency (Table 1), which, when properly correlated, might unmask the presence of pituitary deficiency. Pituitary necrosis following postpartum hemorrhage, justifiably termed "Sheehan's syndrome" in recent medical reports,[13] may be a cause of sudden death, obstetric or otherwise, by obstructing essential physiological function.

TABLE 1.—*Symptomatology of Multiple Hormonal Deficiency of Massive Pituitary Necrosis*

Hormone Deprived	Symptoms *
1. Lactogenic	Absence of lactation
2. Gonadotrophic	Amenorrhea
3. Growth	Microsplanchnia
4. Thyrotrophic	Absence of sweating
	Lowered basal metabolism rate (i. e. minus 35%), resulting in torpor, coldness, constipation, and myxedema
5. Adrenotrophic	Anorexia with weight loss
	Asthenia
	Lowered blood pressure
	Hypoglycemia
	Loss of sexual hair
	Personality change, and signs of mental deterioration
	Lack of sebaceous secretion
	Loss of capillary tone in skin (pallor)
	Decreased libido

* Clinical pattern requires years to develop fully. It is rarely complete, most patients having subclinical variety with minimal symptoms.

The human organism responds to any systemic stress, occasioned by a variety of nonspecific noxious agents, by exhibiting part or all of a general adaptation syndrome. The manifestations of this reaction do not depend on the nature of the stress but rather on its severity and the duration of exposure to it. An increase of hypophysial activity which, in turn, leads to augmented function of the adrenal cortex is required for successful resistance to stress. The all-important response of the adrenal cortex depends on the release of a single hypophysial corticotropin (ACTH) which exerts qualitatively different effects depending on "certain conditioning factors."[14] It has been shown experimentally that "a hypophysectomized animal, like the adrenalectomized animal, is extremely sensitive to a variety of non-specific stresses."[15] Any lesion, therefore, which destroys most of the anterior hypophysis automatically interferes with the secretion and discharge of corticotropin following exposure to stress, resulting in insufficiency of the pituitary-adrenocortical mechanism of defense. The administration of an anesthetic agent during any surgical operation is an example of a stressful situation which demands of the patient an adequate pituitary gland as well as a well-responding adrenal cortex. A pituitary necrosis large enough to interfere with the supply of acutely demanded corticotropin, or the failure of the adrenals to secrete the essential corticoids, could, under surgical circumstances, result in sudden death. Thorn has emphasized that such a catastrophe, directly attributable to adrenocortical failure, occurs through the mechanism of cardiac arrest.[16] This thesis—an unpredictable death during operation as a result of unrecognized pituitary necrosis—is supported by the following clinical experience.

REPORT OF A CASE

Mrs. B. B., a white woman aged 30, was admitted to the Mount Sinai Hospital on April 19, 1949, in preparation for an elective cesarean section at the 36th week of pregnancy. She had been known as a juvenile diabetic since the age of 14, had married at 18, and had experienced four previous pregnancies, summarized chronologically as follows:

1. In 1939 pregnancy had resulted in an antepartum stillborn infant weighing 3,629 gm. at term, following an uneventful gestation and an average-type labor. Her daily dosage of insulin throughout this pregnancy had varied from 20 to 30 units.

2. In 1940 pregnancy had resulted in a spontaneous, complete abortion at the 10th week. The insulin dosage was unchanged

3. In 1943 pregnancy had resulted—without any obstetric or diabetic complication—in a normal female infant weighing 3,855 gm. at term. Assays of urinary gonadotrophins, performed every two weeks from the beginning of the fifth month, had remained within normal limits. The daily dosage of insulin throughout this pregnancy varied from 10 to 20 units.

4. In 1947, during which assays of the urine for both pregnanediol and gonadotrophins were done every two weeks from the beginning of the fourth month, gonadotrophin levels remained within normal limits, but the excretion of pregnanediol was consistently low, varying from 35 to 44 mg. per 24 hours of urine excretion in spite of the use of increasing oral doses of diethylstilbestrol, starting at 50 mg. daily in the third month and attaining 110 mg. daily in the ninth month. The insulin dosage was similar to that employed during the previous pregnancies, varying from 10 to 20 units daily. This pregnancy wa terminated by a smoothly progressive labor of six hours whic resulted in the spontaneous birth, without anesthesia, of a li female infant weighing 4,762 gm., who died in 12 hours becau of intracranial hemorrhage. The third stage of labor was complicated by a massive postpartum hemorrhage with an estimate blood loss of 1,500 cc., resulting in shock from which the patie recovered in two hours following transfusion of 2,000 cc. whole blood. Several months later the patient's insulin requirement began to diminish. She experienced repeated episodes

---

[11] McKay, D. G.; Burnett, C. H., and Burrows, B. A.: Panhypopituitarism: Case Report Correlating Clinical and Pathologic Findings, J. Clin. Endocrinol. **10**: 540, 1950.

[12] Escamilla, R. F., and Lisser, H.: Simmonds' Disease, J. Clin. Endocrinol. **2**: 65, 1942. Farquharson, R. F.: Simmonds' Disease: Extreme Insufficiency of Adenohypophysis (American Lecture Series, Publication No. 34; American Lectures in Endocrinolgy) Springfield, Ill., Charles C Thomas, Publisher, 1950.

[13] Cook, J. E.; Bean, W. B.; Franklin, M., and Embick, J. F.: Postpartum Necrosis of Anterior Lobe of Pituitary Gland: Sheehan's Disease, A. M. A. Arch. Int. Med. **87**: 517 (April) 1951.

[14] Selye, H.: The Physiology and Pathology of Exposure to Stress: A Treatise Based on the Concepts of the General-Adaptation Syndrome and the Diseases of Adaptation, Montreal, Acta, Inc., 1950.

[15] Sayers, G.: Adrenal Cortex and Homeostasis, Physiol. Rev. **30**: 241, 1950.

[16] Thorn, G. W.: Diagnosis and Treatment of Adrenal Insufficiency (American Lecture Series No. 29; American Lectures in Endocrinology) Springfield, Ill., Charles C Thomas, Publisher, 1949.

insulin shock, and discontinued the use of insulin in May, 1948, five months after the delivery. Fasting blood sugars, taken at monthly intervals thereafter, ranged from 79 to 105 mg. per 100 cc.

Aside from noting excessive fatigue, the patient had been well during the fifth (current) gestation, the diabetic state apparently arrested. On her admission to the hospital, April 19, 1949, it was noted that urinalysis revealed a faint trace of protein but no sugar or acetone, the blood count was entirely normal, and the fasting blood sugar was 100 mg. per 100 cc. A classical cesarean section was performed the following morning, with the aid of continuous spinal anesthesia (initial dose, 50 mg. of 5% solution of procaine). The incision was made at 10:58 a. m., and a live female infant, weighing 2,948 gm., was delivered at 11:07 a. m., at which moment, the patient complained of weakness, appeared momentarily dyspneic, and then became unconscious. At 11:08 a. m., no cardiac action was palpable through the diaphragm. Various resuscitative measures, including intravenously administered ephedrine, continuously administered (endotracheal) oxygen, and the intracardiac injection of 4 cc. of 2% solution of procaine, were employed within a few minutes. At 11:20 a. m., the chest wall was incised and opened widely, enabling direct massage of the heart which responded by contracting ineffectually several times per minute for 20 minutes. (The baby was in excellent condition at birth, continued to thrive. and has passed her second birthday uneventfully.)

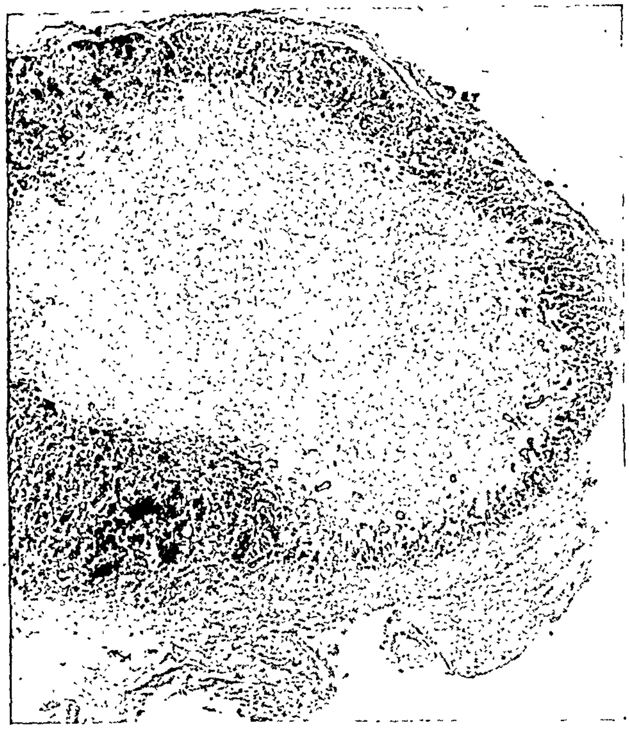


Fig. 1.—Anterior hypophysis, showing area of necrosis which involves about two-thirds of the lobe (× 30).

The postmortem examination, performed one hour after death, revealed significant positive findings in the pituitary gland, adrenals, thyroid, and pancreas. The pituitary was of average configuration but, on section, approximately two-thirds of the anterior lobe was replaced by a circumscribed solid area surrounded by a greyish-tan, gelatinous-appearing zone. Microscopically, the lesion showed a peripheral acinar area and a central amorphous core. The latter consisted of irregular strands of mucin-like material, containing occasional histiocytes, capillaries, and degenerating acini. The rim of normal hypophysial tissue surrounding the necrotic area showed essentially normal acini (Fig. 1).

The adrenal glands revealed both gross and microscopic evidence of cortical atrophy and lipoid depletion. The cortical layers averaged from 0.87 to 1.09 mm. in width. On comparison with adrenal glands of patients presumed to have died following a state of chronic stress and with glands from a normally pregnant woman who died suddenly following delivery, the cortical atrophy is apparent and approximates that characteristic of chronic stress (Table 2). The adrenal cortex from the normally pregnant woman showed abundant lipoids and measured from 1.70 to 2.2 mm., corresponding to the hypertrophy known to occur in pregnancy (Fig. 2 and 3).

The thyroid gland appeared normal macroscopically, but showed evidence of diminished activity on microscopic study.

TABLE 2.—*Comparison of Width of Adrenal Cortex in Women Who Died of Varied Causes*

Cause of Death	Width of Adrenal Cortex (Mm.)
Normal Pregnancy	
Sudden death immediately following delivery at term, attributed to anesthesia	1.70 to 2.20
Chronic Stress	
1. Gastric carcinoma	0.70 to 1.02
2. Subacute bacterial endocarditis	0.85 to 1.10
3. Myasthenia gravis	0.92 to 1.22
Pituitary Necrosis	
Death during cesarean section (Mrs. B. B.)	0.87 to 1.09

The pancreas was grossly normal but revealed extensive atrophy of the islets on microscopic study. It was concluded that the patient showed anatomic evidence of an old infarct of the anterior hypophysis, distinct atrophy of the adrenal cortex, slight atrophy of the thyroid gland, and marked destruction of the pancreatic islets.

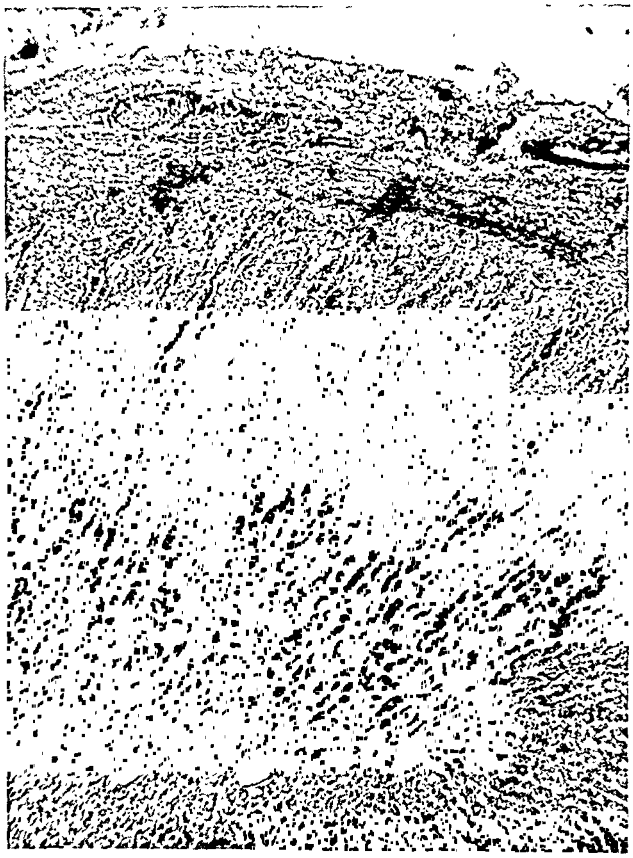


Fig. 2.—Adrenal gland from pregnant woman at term, who died suddenly. The hypertrophy of the cortex can be noted (× 30).

COMMENT

In retrospect, the sequence of events leading to the sudden death of Mrs. B. B. appears crystal-clear. The pituitary lesion, in this instance, could have arisen either as a result of localized thrombosis in a diabetic[5] or following the severe postpartum hemorrhage of the fourth pregnancy.[17] Whatever its origin, its presence was not recognized. A careful restudy of the patient's history between the fourth and fifth pregnancies revealed three important features which were, in the light of subsequent events, meaningful.

---

[17] Sheehan.[5] Sheehan and Murdoch.[6] Sheehan.[7]

1. Following the fourth delivery and its accompanying postpartum hemorrhage, the patient's breasts remained flaccid throughout the puerperium, secreting nothing—not even colostrum.

2. The regrowth of pubic hair was slow. Moreover, when the hair was again present, it was meager in comparison to the luxuriant growth formerly present.

3. The repeated episodes of insulin shock, leading to the final exclusion of insulin in a patient who had been diabetic for many years, point to a state of pituitary and adrenocortical insufficiency which was not properly evaluated. The patient was, in effect, a human example of the Houssay phenomenon. The occurrence of pituitary hypofunction in a true diabetic—one whose diabetes is due solely to a deficiency of insulin—is exceedingly rare.[18] Such a patient should show, as in the case reported here, amelioration of the diabetes, just as pancreatic diabetes in the experimental animal is ameliorated by hypophysectomy.[19] Only six such patients have been previously reported.[20]

The occurrence of a subsequent pregnancy in a patient who had sustained sufficient thrombosis in the sinuses of the anterior lobe of the pituitary to result in massive necrosis of the gland is surprising. The earliest manifestations of pituitary deficiency concern the absence of lactation and the inability of the patient to menstruate proper- . Amenorrhea is usually a prominent symptom. There e, however, four previously reported instances of roved pituitary necrosis followed by subsequent pregnancy.[21] Each of the four patients died during the puerperium, and at post-mortem each showed, as in our patient, a massive scar of pituitary necrosis traceable in retrospect to a traumatic, shocking episode at the conclusion of a prior pregnancy. It is difficult to reconcile such sudden puerperal deaths, presumably because of pituitary necrosis, with those patients who show signs of hypopituitarism following postpartum hemorrhage (Sheehan's syndrome) and who are apparently improved by another pregnancy[22] or by injections of pituita hormones.[23] These opposing observations emphasiz perhaps, that the eventual outcome in Sheehan's sy drome varies with the site and degree of the necrosis, well as with the type of cell involved. The mitigation the symptoms during pregnancy is understandable an may be ascribed to the production of corticosteroids an possibly of corticotropin by the placenta.[24]

The unhappy turn of events in our patient, and t certain knowledge that a subsequent pregnancy cou take place in the presence of pituitary necrosis, forces us the realization that the later pregnancy in any su patient could be fatal. It is apparent that sudden dea under stress might be the fate of any woman who sustai an unrecognized partial pituitary necrosis following o stetric shock at term. It would, therefore, be life-savi to identify such potential candidates for catastrophe fr among the puerpera who are, in Jeffcoate's words, "sav from the brink of the grave and live to show evidence permanent pituitary damage."[25] In order to recognize presence of subclinical hypopituitarism, all women s vaged from severe postpartum hemorrhage should subjected later to a series of endocrinologic investigati designed to detect insufficiency of the adrenal cor secondary to hypophysial necrosis (Table 3). We ha in association with our department of endocrinology a that of the Philadelphia General Hospital, initiated su a study.[26] Progress is admittedly slow, because of difficulty in gathering a sufficient number of patients w had previously experienced an episode of severe po partum hemorrhage associated with shock. To da

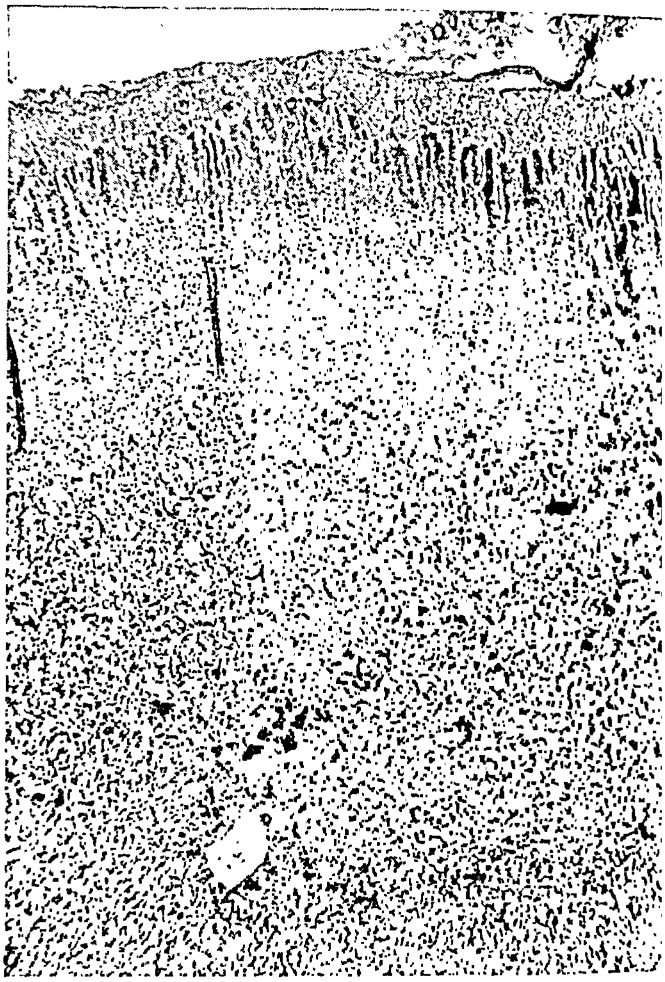


Fig. 3.—Adrenal gland of patient who had unrecognized pituitary nec sis, showing decrease in cortical depth (× 30).

---

[18] Balfour, W. M., and Sprague, R. G.: Symposium on Diabetes Mellitus: Association of Diabetes Mellitus and Disorders of the Anterior Pituitary, Thyroid and Adrenal Cortex, Am. J. Med. **7**: 596, 1949.

[19] Houssay, B. A., and Biasotti, A.: La diabetes pancreática de los perros Hipofisoprivos, Rev. Soc. argent. biol. **6**: 251, 1930; abstracted, Le diabète pancréatique des chiens hypophysectomisés, Compt. rend. Soc. biol. **105**: 121, 1930.

[20] Marzullo, E. R., and Handelsman, M. B.: Pituitary Necrosis and Diabetes Mellitus, J. Clin. Endocrinol. **11**: 537, 1951.

[21] Sheehan.[5] Sheehan and Murdoch.[6] Jakob, A.: Zwei Falle von Simmondsscher Krankheit (hypophysäre Kachexie) mit besonderer Berücksichtigung der Veranderungen im Zentralnervensystem, Arch. path. Anat. **246**: 151, 1923. Farquharson, R. F.; Belt, T. H., and Duff, G. L.: Simmonds' Disease: Clinical and Pathological Observations on 4 Cases, Tr. Am. Clin. & Climatol. A. **54**: 106, 1938.

[22] Sheehan, H. L., and Murdoch, R.: Postpartum Necrosis of Anterior Pituitary: Production of Subsequent Pregnancy, Lancet **1**: 818, 1939. Murdoch, R., and Govan, A. D. T.: Therapeutic Effect of Subsequent Pregnancy in Simmonds' Disease: Case Report, J. Obst. & Gynaec. Brit. Emp. **58**: 18, 1951.

[23] Sheehan, H. L.; Spence, A. W.; Fraser, R., and Simpson, S. L.: Discussion on Simmonds' Disease, Proc. Roy. Soc. Med. **41**: 187, 1948. Nassar, G.; Djanian, A., and Shanklin, W.: Etiological Significance of Ergot in Incidence of Postpartum Necrosis of the Anterior Pituitary: Preliminary Report, Am. J. Obst. & Gynec. **60**: 140, 1950.

[24] Jailer, J. W., and Knowlton, A. I.: Simulated Adreno-Cortical Activity During Pregnancy in Addisonian Patient, J. Clin. Invest. **29**: 1430, 1950.

[25] Jeffcoate, T. N. A.: Post-Partum Necrosis of Pituitary, Irish J. M. Sc. **6**: 256, 1948.

[26] Schneeberg, N. G.; Viellard, C.; Perloff, W. H., and Israel, S. L.: Unpublished data.

seven such patients have been studied. Six of the seven have shown a significantly reduced excretion of formaldehydogenic corticosteroids, but most of the other results (Table 3) have thus far been within normal range.

It is presumed that the frequency of postpartum pituitary necrosis is not great. Nevertheless, the importance of identifying the least number of such patients cannot be gainsayed, for there is much yet to learn of both its etiology and clinical management. Occurring in different degrees, the disease has varied manifestations. The fully developed clinical syndrome, as represented by Simmonds' disease, is comparatively rare. Only a very few of the women suffering this complication as a result of postpartum hemorrhage have easily recognized clinical symptoms. The challenge, therefore, is not to find the patient with patent signs of hypopituitarism, but rather to discover the victim whose clinical evidence is masked by seemingly physiological behavior, who requires more subtle means of recognition.

TABLE 3.—*Outline of Fifteen Investigations Aiding the Recognition of Subclinical Hypopituitarism*[26]

Organ Evaluated	Method of Study
Pituitary	1. X-ray of sella turcica
	2. Urinary bio-assay for gonadotrophins
Ovary	3. Urinary bio-assay for estrogen
	4. Vaginal smears
	5. Endometrial biopsy
Thyroid	6. Basal metabolism rate
	7. Protein-bound iodine of serum
	8. Cholesterol levels
	9. Radioactive iodine (tracer study)
Adrenal	10. Insulin tolerance test
	11. Robinson-Kepler-Power water excretion test
	12. Eosinophil response to epinephrine and to corticotropin
	13. Assays for 17-ketosteroids and 11-oxysteroids
	14. Estimation of sodium, potassium, and chlorides in blood
Pancreas	15. *Intravenous glucose tolerance test and simultaneous determination of serum inorganic phosphate*

SUMMARY AND CONCLUSIONS

The pituitary necrosis which may follow severe postpartum hemorrhage (Sheehan's syndrome) varies in degree. If it is massive, the resultant symptoms are likely to be those of an anterior hypophysectomy, expressing deficiency of the lactogenic, gonadotrophic, adrenotrophic, thyrotrophic, and growth hormones. If it is moderate, its presence may be obscured by the patient's ability to lead an apparently normal life, including both menstrual and reproductive functions. Under such circumstances, the masked pituitary necrosis would not interfere with ordinary activity, but might result in failure of the hypophysis to sustain the individual through a period of physical stress.

This thesis is exemplified by the history of a juvenile diabetic who suffered a severe postpartum hemorrhage at the conclusion of a fourth pregnancy and who succumbed suddenly at the onset of a planned cesarean section at the termination of her fifth pregnancy because of a massive, previously undetected, fibrotic lesion of the anterior hypophysis. In reviewing the patient's history after the post-mortem, it was learned that some signs of pituitary deficiency had developed following the postpartum hemorrhage, but that they had been misinterpreted.

The importance of attempting to identify the presence of pituitary necrosis in all women who recover from severe postpartum hemorrhage is emphasized, and an outline of the required endocrinologic investigations is presented. It is averred that such a patient should be shielded from any stress which might necessitate an immediate hypophysial response with release of corticotropin.

2116 Spruce St. (Dr. Israel).

TRANSIENT INVERSION OF T WAVES AFTER PAROXYSMAL TACHYCARDIA

Ralph M. Myerson, M.D.
and
A. Henry Clagett Jr., M.D., Wilmington, Del.

An electrocardiographic syndrome consisting of transient inversion of T waves after paroxysms of tachycardia in normal hearts has been recognized for some time. The resemblance of these changes to those of serious organic heart disease makes obvious the importance of their recognition and understanding. The recent observation of this syndrome in two apparently healthy young men prompted us to review the literature on this subject. It is our belief that knowledge of the frequency, characteristics, and importance of this syndrome is not as widespread as it should be.

In 1935, Graybiel and White[1] stressed the fact that inversion of T waves is not necessarily associated with organic heart disease, and that care must be taken in the diagnosis of heart disease when inverted T waves are the only electrocardiographic finding. They cited a number of conditions in which inverted T waves occurred with no evidence of associated cardiac disorder. Among their cases were two of paroxysmal tachycardia, one of which occurred in a young man with the "short P-R interval associated with prolonged QRS" syndrome. In this patient episodes of ventricular tachycardia were prone to develop following which there was transient inversion of T_1. Transient T wave inversion in leads 2 and 3 was noted in another young man with paroxysmal bouts of ventricular tachycardia but no evidence of heart disease.

From the medical service, Veterans Administration Hospital, Wilmington, Del.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Graybiel, A., and White, P. D.: Inversion of the T-Wave in Lead I or II of the Electrocardiogram in Young Individuals with Neurocirculatory Asthenia, with Thyrotoxicosis, in Relation to Certain Infections, and Following Paroxysmal Ventricular Tachycardia, Am. Heart J. **10**: 345, 1935.

In addition to the 2 cases reported here, we have been able to find reports of 24 well-documented cases of this syndrome.[2] Only those cases that fulfilled the following criteria were included: no evidence of cardiac disease; follow-up with serial electrocardiograms after cessation of the tachycardia; and well-demonstrable transient T wave inversion in the absence of other electrocardiographic changes suggesting cardiac disease. The Table summarizes the findings in these reported cases and in the two recently observed by us.

While the age of the patients varied from 13 to 60, most were under the age of 40, and the majority were males.

Summary of Previously Reported Cases of Transient T Wave Inversion Following Tachycardia

Author	Patient's		Tachycardia		Leads with T Wave Inversion	Duration of Changes	Remarks
	Age	Sex	Type	Duration			
Graybiel & White[1]	"Young"	M	PVT	< 24 hr.	1	Gradual return to normal	Short P-R; prolonged QRS
	33	M	PVT	< 24 hr.	2, 3	< 47 days	....
Campbell, M. & Elliott[2a]	21	M	PVT	10 days	1	< 21 days	....
	39	M	PVT	17 days	2, 3	11 days	Died during attack at age 45; autopsy negative
Cossio, Sabathie, & Berconsky[2b]	13	M	PVT	36 hr.	2, 3	40 days	....
Campbell[2c]	45	F	PAT	3 days	3	3 days	....
	44	F	PAT	6 days	1, 2, 3	7 days	Short P-R; prolonged QRS
	21	M	PVT	4 days	2, 3	10 days	....
Currie[2d]	13	F	PVT	36 hr. 3 hr.	2, 3 2, 3	< 30 days < 28 days	Patient had two attacks at a 10-month interval
Dubbs & Parmet[2e]	52	M	PVT	21 days	2, 3	4 days	....
Geiger[2f]	33	M	PAT	44 hr. 9 hr.	2, 3 2, 3	< 35 days > 12 days, < 26 days	Patient had two attacks at a 10-year interval
Cossio, Vedoya, & Berconsky[2g]	18	M	PVT	23 days	1, 2, 3	45 days	....
Zimmerman[2h]	47	F	SV	11½ hr.	1, 4f	2 days	Mild hypertension; moderate arteriosclerosis
Joly[2i]	35	M	PVT	9 days	2, 3	< 21 days	....
Solarz[2j]	40	M	SV	2½ days	1, 2, 3, CR 1-6	> 22 days < 28 days	....
Smith[2k]	23	M	PVT	4 days 21 hr. 26 hr.	All All 2, 3	57 days 15 days 12 days	Three separate attacks observed in same patient
Freundlich[2l]	39	M	PVT	9 hr.	1, 4	9 days	....
	38	F	PVT	10 min.	2, 3	3 weeks	....
Videla[2m]	60	M	PVT	22 hr.	1, CR 3-6	28 days	....
	60	Not given	Nodal	"Minutes"	3, CR 1-3	10 days	....
Etala & Berreta[2n]	21	M	PVT	....	1, 2, 3 1, 2, 3, CR 4-6	....	Two attacks in same patient. Autopsy following 2d attack revealed normal heart
Schulten[2o]	27	M	PVT	?	1, 2, 3	26 days	....
Essel[2p]	25	M	PVT	19 days	2, 3	12 days	....
Smith[2q]	29	M	PVT	26 hr.	2, 3	< 21 days	....
Myerson, R. M. & Clagett, A. H.	32	M	PAT	14 hr.	V_1-V_6, low in 1, 2, 3. aV_l, aV_f	4 days	....
	24	M					
			PAT	10 hr.	2, 3, aV_f, V_5, V_6, low in 1 and V_4	> 3 days < 23 days	....

Abbreviations: PVT is Paroxysmal Ventricular Tachycardia; PAT is Paroxysmal Auricular Tachycardia; SV is Supraventricular.

Transient T wave inversion followed paroxysmal ventricular tachycardia in 18 cases, paroxysmal auricular tachycardia in five, "supraventricular" in two, and nodal in one. This relationship may be apparent rather than real, since the patient with paroxysmal ventricular tachycardia, because of its seriousness, usually is studied more thoroughly than the one with paroxysmal auricular tachycardia. Serial electrocardiograms following all types of tachycardia are necessary to determine this point.

The duration of the tachycardia varied from a few minutes to 27 days. This had no relationship, however, to the magnitude or the duration of the T wave changes. In the case reported by Freundlich,[2l] an episode of paroxysmal ventricular tachycardia lasting 10 minutes was followed by inversion of T_2 and T_3 for a period of three weeks. On the other hand, the case of paroxysmal ventricular tachycardia reported by Dubbs and Parmet[2e] as lasting for 21 days was followed by inversion of T_2 and T for only four days.

It is difficult to evaluate the various patterns of T wave inversion because many of these cases were reported before multiple chest leads and unipolar electrocardiography were used. There seems to be a predominance of a "posterior" pattern; that is, of inverted T waves in lead 2 and 3. This occurred in 15 cases. Five cases showed what might be considered as an "anterior" pattern; that is, T wave inversion in lead 1 and the chest leads. The remainder of the cases showed a mixed pattern of T wave inversion.

No other consistent electrocardiographic changes have been noted. In a few instances transient and minor depression of the S-T segment has been mentioned. In a very careful study, Videla[2m] pointed out that the pro

---

2. (*a*) Campbell, M., and Elliott, G. A.: Paroxysmal Tachycardia: Etiology and Prognosis of 100 Cases, Brit. Heart J. **1**: 123, 1939. (*b*) Cossio, P.; Gonzalez Sabathie, L., and Berconsky, I.: Alteraciones del segmento S-T de la onda T durante o después de crisis prolongadas de taquicardia paroxística, Rev. argent de cardiol. **8**: 168, 1941. (*c*) Campbell, M.: Inversion of T Waves After Long Paroxysms of Tachycardia, Brit. Heart J. **4**: 49, 1942. (*d*) Currie, G. M.: Transient Inverted T Waves After Paroxysmal Tachycardia, ibid. **4**: 149, 1942. (*e*) Dubbs, A. W., and Parmet, D. H.: Ventricular Tachycardia Stopped on the Twenty-First Day by Giving Quinidine Sulfate Intravenously, Am. Heart J. **24**: 272, 1942. (*f*) Geiger, A. J.: Electrocardiograms Simulating Those of Coronary Thrombosis After Cessation of Paroxysmal Tachycardia, ibid. **26**: 555, 1943. (*g*) Cossio, P.; Vedoya, R., and Berconsky, I.: Modificaciones del electrocardiograma después de ciertas crisis de taquicardia paroxística, Rev. argent. de cardiol. **11**: 164, 1944. (*h*) Zimmerman, S. L.: Transient T-Wave Inversion Following Paroxysmal Tachycardia, J. Lab. & Clin.

(Footnote 2 continued on next page)

longation of the Q-T interval, often considered part of the post-tachycardia syndrome, was present only in cases where quinidine had been used. In no case has there been any change, such as the development of Q waves, in the QRS complex.

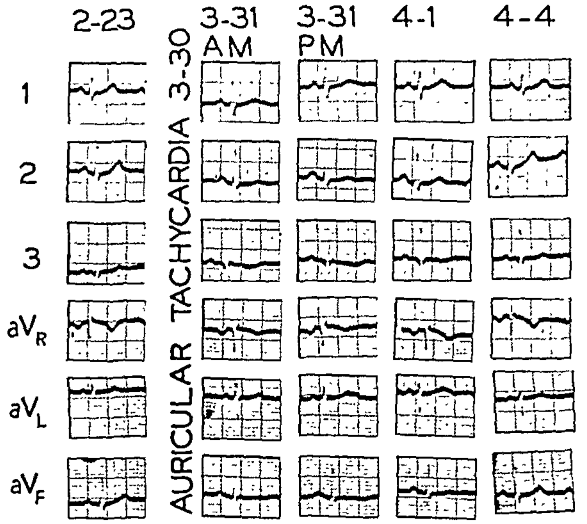


Fig. 1.—Limb leads (Case 1) showing serial electrocardiograms before and after tachycardia.

The mechanism of post-tachycardial T wave inversion is unknown. Cossio and others [2b] attributed the changes to "enlargement of the heart or right ventricular strain." Currie [2d] postulated that the changes were caused by a "completely reversible process indicating some degree of exhaustion or strain of the heart muscle." Dubbs and Parmet [2e] attributed the transient T wave inversion to "fatigue and exhaustion of the myocardium resulting from prolonged tachycardia." Geiger [2f] offered the hypothesis of "myocardial ischemia associated with a sharply diminished output."

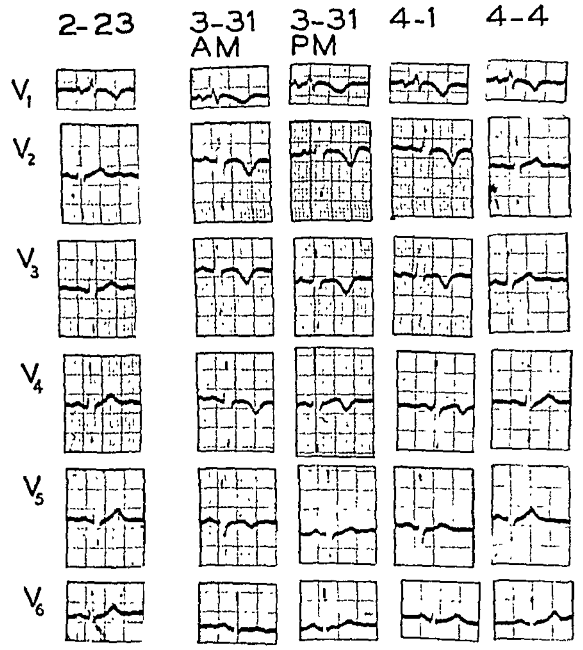


Fig. 2.—Chest leads (Case 1) showing serial electrocardiograms before and after tachycardia.

Cossio, Vedoya and Berconsky [2g] and later Smith [2k] emphasized the fact that post-tachycardial changes occurred most frequently after ventricular tachycardia, and they postulated that the changes were based on gradually diminishing activity in the automatic focus responsible for the ventricular tachycardia. Anaphylactic and autonomic factors have also been mentioned.

The problem remains unsolved. It seems likely that tachycardia affects repolarization in a manner similar to smoking or the drinking of cold water. It is not known why some respond to these stimuli in this manner while the majority do not.

REPORT OF CASES

Case 1.—A white man, aged 32, was first seen Feb. 23, 1949, with a history of innumerable attacks of rapid heart action, one of which showed electrocardiographic evidence of paroxysmal auricular tachycardia. The episodes occurred for no apparent reason and lasted from three to six hours, subsiding spontaneously. Just prior to being seen he had noticed some increase in the frequency of his attacks, the last occurring on Feb. 7, 1949.

Past history revealed a left nephrectomy in 1942 following trauma. Postoperatively he had an attack of homologous serum jaundice.

Physical examination was within normal limits, except for a well-healed left nephrectomy scar. The heart was not enlarged, the rhythm was regular with a rate of 80 per minute, and there were no murmurs. The blood pressure was 118/80.

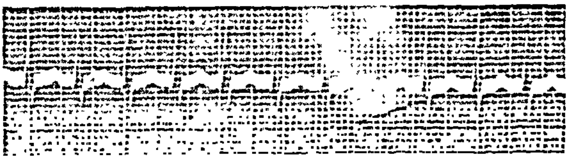


Fig. 3.—Strip of lead 2 (Case 1) showing paroxysmal auricular tachycardia (March 30, 1949).

Laboratory studies, including complete blood cell count, urinalysis, liver and renal function tests, blood cholesterol, and basal metabolic rate, were all within normal limits. Roentgenogram of the chest revealed no findings of significance. An electrocardiogram made on Feb. 23, 1949, (Figs. 1 and 2) was interpreted as showing an inverted T wave in lead V_1; this was considered to be within normal limits.

The patient was readmitted to the hospital on March 30, 1949, complaining of palpitation and apprehension of about 10 hours' duration. Physical examination revealed a heart rate of 180 per minute. The rhythm was regular and the electrocardiogram showed evidence of paroxysmal auricular tachycardia (Fig. 3). Carotid sinus and eyeball pressure were ineffectual in relieving the tachycardia, and he was given 3 grains (0.194 gm.) of quinidine followed by 6 grains (0.389 gm.) three hours later. Shortly thereafter, his pulse rate fell to 96 per minute. The total duration of the attack was 14 hours.

An electrocardiogram made shortly after conversion to normal sinus rhythm revealed inverted T waves in leads V_1 through V_6, and T waves of low voltage in leads 1, 2, 3, aV_L, and aV_F. Neither S-T changes nor Q waves were present. Serial electro-

---

Med. **29**: 598, 1944. (*i*) Joly, F.: Deformation électrocardiographique transitoire après acces tachycardiques paroxystiques, Arch. des mal du Coeur **37**: 42, 1944. (*j*) Solarz, S. D.: So-Called "Infarction Type" Electrocardiographic Changes Following Paroxysmal Tachycardia, Ann. Int. Med. **27**: 447, 1947. (*k*) Smith, L. B.: Paroxysmal Ventricular Tachycardia Followed by Electrocardiographic Syndrome with Report of Case, Am. Heart J. **32**: 257, 1946. (*l*) Freundlich, J.: Paroxysmal Ventricular Tachycardia, ibid. **31**: 557, 1946. (*m*) Videla, J. G.: El síndrome electrocardiográfico Post-Taquicárdico, Rev. argent. de cardiol. **14**: 30, 1947. (*n*) Etala, F., and Berreta, J. A.: Estudio anatamo-Clínico de un caso de síndrome electrocardiográfico post-taquicardico, ibid. **15**: 133, 1948. (*o*) Schulten, H.: Ueber 2 Fälle von paroxysmaler Tachykardie mit eigenartigen elektrocardiographischen Folgeerscheinungen, Ztschr. f. Kreislaufforsch. **34**: 104, 1942. (*p*) Essel, L.: Alterations transitoires de l'électrocardiogramme après des crises de tachycardie ventriculaire paroxystique, thesis, Paris, 1945. (*q*) Smith, J. G.: The Electrocardiographic Syndrome Following Paroxysmal Tachycardia, Ann. Int. Med. **31**: 504, 1949.

cardiograms showed a rapid return to a normal configuration, although T wave inversion persisted in V_1. Apparently this is normal for this patient.

In the past 16 months the patient has continued to have bouts of paroxysmal auricular tachycardia. One of these was followed electrocardiographically and again transient inversion of T waves was noted following cessation of the tachycardia.

It should be noted that any of the electrocardiograms made within 48 hours of the tachycardia might be interpreted as being caused by myocardial disease. The rapid return to normal and the lack of S-T segment and Q wave changes are presumptive evidence of the benign nature of these changes.

CASE 2.—A white man, aged 26, was admitted to the hospital on May 6, 1950, complaining of the sudden onset of shortness of breath, palpitation, weakness, and apprehension about four hours prior to entry. He stated that he had had two similar, though shorter attacks, in 1944.

Past history was noncontributory. Physical examination was normal except for a heart rate of 160. The rhythm was regular, the heart normal in size, and there were no murmurs. The blood pressure was 120/80.

Results of routine laboratory studies including roentgenogram of the chest were normal. An electrocardiogram on admission showed evidence of paroxysmal auricular tachycardia.

Vagal stimulation was ineffective. Three grains of quinidine were given orally three hours prior to the cessation of the attack, the duration of which was 10 hours.

An electrocardiogram taken shortly after conversion to normal sinus rhythm revealed inverted T waves in leads 2, 3, aV_F, V_5 and V_6, and T waves of low amplitude in leads 1 and V_4. No change in S-T segment or Q waves was noted.

On May 8, 1950, thirty-six hours after admission of the patient to the hospital, the T waves were upright in leads V_5 and V_6, though still inverted in leads 2, 3, and aV_F.

On May 9, 1950, T waves were low but upright in leads 2 and [illegible]$_F$, and flat in lead 3.

The patient was last seen on May 29, 1950, at which time the T waves were upright in all leads.

SUMMARY

The literature and previous case reports on T wave inversion following tachycardia are reviewed and two cases of T wave inversion after auricular tachycardia are presented.

The shortness of the period during which the inversion lasts, and the lack of other cardiac abnormalities are presumptive evidence of the benign nature of the changes after tachycardia. Paroxysmal auricular tachycardia is a common occurrence in young adults, and the symptomatology of the attack may simulate myocardial infarction. Since the electrocardiogram may show changes suggesting infarction, the physician may be misled into diagnosing a serious myocardial lesion. Serial tracings will aid in the proper evaluation of the electrocardiogram as a part of the total clinical picture and should reduce such errors of diagnosis to a minimum.

Medical Research.—The uniformity of nature and the unity of science forbid us to circumscribe the content of medical research. By so much as man has a body, the methods and the knowledge of physics and chemistry are of primary importance to medical research. By so much as that body is alive, medical research finds all the fields of biology at least germane to its interests, and suggestive by analogies and comparisons. The subtleties of man's thoughts and emotions and the far reaches of his spirit . . . extend the bearing of medical research in other directions or dimensions. Nor is medical research limited at all to the study of disease. The very unity of science justifies, where, indeed, it does not enjoin, the use of any science to extend and to refine our knowledge of the substance, the behavior, in short the nature of man.—Alan Gregg, The Furtherance of Medical Research, New Haven, Yale University Press, 1941, p. 2.

CLINICAL NOTES

ENTRANCE OF COMMON BILE DUCT INTO A DUODENAL DIVERTICULUM

REPORT OF A CASE CORRECTED BY SURGERY

H. M. Blegen, M.D.
A. V. Swanberg, M.D.
and
W. B. Cox, M.D., Missoula, Mont.

Cases in which the common bile duct enters a duodenal diverticulum are apparently exceedingly rare. Recently Collett, Tirman, and Caylor [1] reported a case in which this condition was recognized roentgenologically by cholecystograms made after cholecystectomy and T-tube drainage of the common duct. In a review of the literature these authors were able to find only five cases reported prior to 1949. In all of these the anomaly was found at autopsy. The following case, associated with a duodenal ulcer and a jejunal diverticulum, is of interest because the condition was corrected surgically by partial gastrectomy, excision of the duodenal diverticulum and a transplantation of the common duct into the cut end of the duodenum.

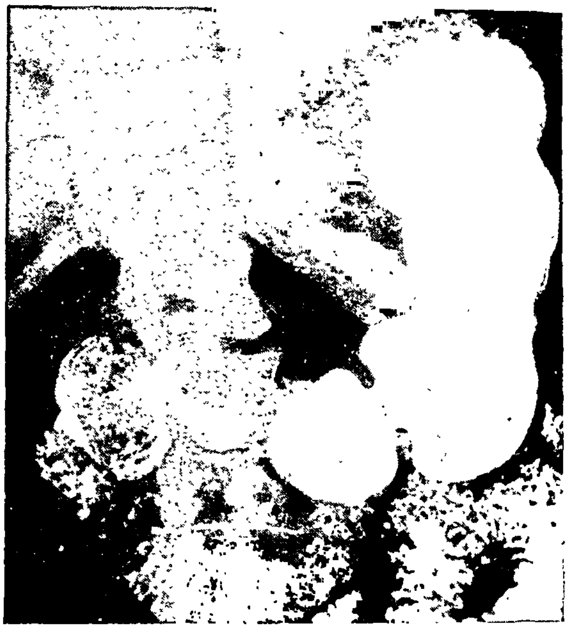


Fig. 1.—X-ray of upper gastrointestinal tract revealing diverticulum in second portion of duodenum and deformity of duodenal cap due to ulcer.

REPORT OF CASE

Patient A. R., a 65-year-old white woman, was referred to the Clinic on Jan. 12, 1951, with a diagnosis of probable duodenal tumor. For four months she had had recurrent attacks of mild midepigastric pain and distress in the right upper abdominal quadrant. The discomfort was described as a sensation of swelling and pressure in the upper part of the abdomen "as if pockets of gas were accumulating." There was no apparent relationship to food or meals. She had never been jaundiced, nor had sh

---

From the Surgical Service of the Western Montana Clinic.

[1] Collett, H. S.; Tirman, W. S., and Caylor, H. D.: Roentgen Demonstration of the Common Duct Entering a Duodenal Diverticulum, Radiology 55: 72 (July) 1950.

noticed any blood in her stools. Her past history was noncontributory except for a mild attack of upper abdominal distress 20 years previously, which lasted 24 hours and was thought to be due to gallbladder trouble.

The patient was 151 cm. (4 ft., 11½ in.) tall and weighed 49.9 kg. (110 lb.). Examination of the head, neck, heart, lungs, pelvis, and rectum revealed that all were essentially normal. The blood pressure was 160/90. Abdominal examination revealed slight epigastric tenderness but no palpable masses. The urine and hemoglobin were normal. The serum bilirubin was 0.12 mg. per 100 cc. of serum.

Roentgenograms of the upper gastrointestinal tract (W. B. C.) revealed a large lesion in the second portion of the duodenum, which was thought to be a diverticulum or tumor (Fig. 1). In addition, there was a deformity of the duodenal cap, thought to be due to an ulcer. The stomach was normal. Cholecystograms revealed a normally functioning gallbladder. Chest roentgenograms were normal. The preoperative diagnosis was probable duodenal tumor or diverticulum.

Operation was performed on Jan. 17, 1951 (H. M. B.). The abdomen was opened through an upper right rectus "hockey-stick" incision. The liver, stomach, gallbladder, colon, and pelvic organs were normal. An active duodenal ulcer, 1 cm. in diameter, was found just distad to the pyloric ring, adherent to the under surface of the liver. A duodenal diverticulum about the size of a hen's egg was found projecting to the right from under the lateral margin of the duodenal curvature. (Fig. 2). The common duct was not dilated or thickened; it did not contain stones. Examination of the small bowel revealed a smaller jejunal diverticulum on the antimesenteric border of the jejunum about 2 in. (5 cm.) below the ligament of Treitz. The lateral peritoneal reflection was incised and the duodenum mobilized and rolled medially. The diverticulum was dissected and freed from the surrounding retroperitoneal connective tissue. The neck of the sac was found to enter the duodenum on the posterior wall of the second portion in the usual location of the ampulla of Vater. The terminal portion of the common duct, however, entered the diverticulum about 1.5 cm. above this point. The neck of the sac was divided between clamps flush with the duodenal wall, and the duodenal defect was closed by interrupted silk sutures. The common duct was then divided near its attachment to the diverticulum, and the diverticulum was removed. A 70% partial gastrectomy was then done, and after resection the common duct was anastomosed to the cut end of the duodenal stump over a small rubber catheter which had previously been inserted into the duct at a higher level. As a precautionary measure, the gallbladder was anastomosed to the duodenum at a lower level. Intestinal continuity was then reestablished by a posterior Polya anastomosis at the site of the jejunal diverticulum, which was removed in making the anastomosis (Fig. 3). Two Penrose drains and the small biliary catheter were brought out through a right lateral stab wound; the abdomen was closed in layers.

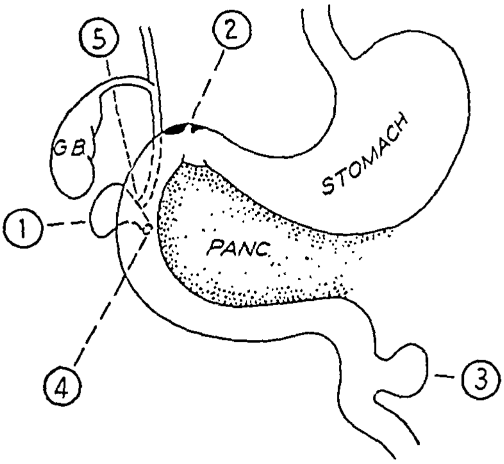


Fig. 2.—Diagram showing jejunal and duodenal diverticuli with common duct entering the latter. (*1*) Duodenal diverticulum; (*2*) duodenal ulcer; (*3*) jejunal diverticulum; (*4*) entrance of diverticulum into duodenum; (*5*) entrance of common duct into diverticulum.

Examination of the surgical specimen revealed a thin-walled sac about 2½ in. (6 cm.) in diameter filled with bits of hair, vegetable fiber, and barium. The inner wall of the sac was somewhat trabeculated, containing sharply demarcated punched-out defects, which were probably secondary diverticula. The mucosal lining was that of the duodenum, but the sac lacked a serosal layer.

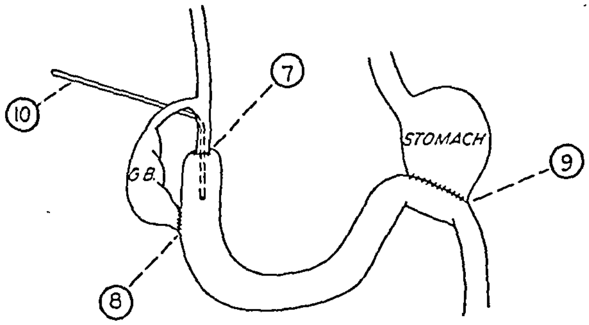


Fig. 3.—Postoperative anatomic relations of gallbladder, common duct, and duodenum: (*7*) anastomosis between common duct and cut end of duodenal stump; (*8*) cholecystoduodenostomy; (*9*) gastrojejunostomy; (*10*) biliary catheter.

The postoperative course was uneventful. Nasogastric suction was maintained for five days; then fluids and foods by mouth were gradually increased. The common duct tube was clamped intermittently and finally removed on the 16th postoperative day. The patient was dismissed from the hospital on the 21st postoperative day. Subsequent examinations revealed the patient to be in good health.

COMMENT

Since 65% of all duodenal diverticula occur in the second portion of the duodenum near the ampulla of Vater, it is surprising that entrance of the common bile duct into a duodenal diverticulum does not occur more frequently. Because of the silent nature of duodenal diverticula in general, and the difficulties in demonstrating their relationship to the ampulla, it seems probable that many of these anomalies are overlooked. The lesions in all six cases previously reported were discovered only after painstaking effort—five by autopsy and one by repeated cholecystograms. The symptoms in this case were minimal; exploration was finally advised because of the possibility of a duodenal tumor. Ordinarily the ulcer would have been treated first by a medical regimen.

It is interesting to speculate on the relationship between the ulcer and the diverticulum. It seems probable that the accumulation of bile in the diverticulum may have interfered with the proper neutralization of the gastric juices in the first portion of the duodenum, making the mucosa in that area more susceptible to autodigestion and ulceration.

SUMMARY

An unusual case of a common bile duct entering a duodenal diverticulum and an associated duodenal ulcer is reported. To our knowledge this is the first reported case in which this condition was recognized at surgical exploration and successfully repaired.

Owen and W. Broadway (Dr. Swanberg).

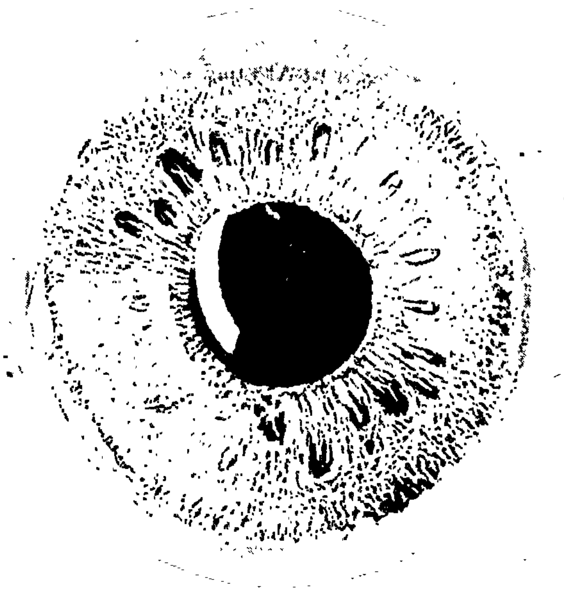
CALCINOSIS DUE TO TREATMENT OF DUODENAL ULCER

Joseph M. Miller, M.D.
Irving Freeman, M.D.
and
William H. Heath, M.D., Fort Howard, Md.

In 1949, Burnett, Commons, Albright, and Howard[1] reported six cases of hypercalcemia, calcinosis, and renal insufficiency, without hypercalciuria or hypophosphatemia, in patients with a history or symptoms of peptic ulcer, who had received excessive amounts of milk and absorbable alkali. The following case demonstrates many of the features of this syndrome.

REPORT OF A CASE

A 41-year-old white man was admitted to the Veterans Administration Hospital, Fort Howard, Md., on June 26, 1949, complaining of weakness, nausea, and vomiting, of three to four days' duration. He had noted epigastric pain in September, 1942, while in the United States Navy. Relief had been obtained from self-medication with about a quart of milk a day. He was admitted to a hospital while in service for pain and swelling of the left arm. While there he asked for sodium bicarbonate and milk to relieve his epigastric pain, and investigation revealed a duodenal ulcer. The patient was put on a Sippy No. 1 diet in September, 1942, and then progressively advanced to other ulcer diets until January, 1943, when he was discharged from the Navy because of his duodenal ulcer.



Drawing of iris and limbus as region appeared through slit lamp. Calcium deposits from irregular crescents between 2 and 4 and 7 and 9 o'clock.

The patient returned to his civilian occupation and continued to eat a modified diet, but since he was not under the care of a physician, the nature of the modifications could not be determined. He remained fairly well until March, when he experienced a return of mild epigastric pain. His milk consumption at that time averaged about four to five glasses a day, and he took about ½ teaspoon of sodium bicarbonate every night and sometimes twice a night. By the winter of 1944 he was taking at least one teaspoon of sodium bicarbonate twice a day. In December of 1948 extreme weakness, syncope, and the passage of tarry stools over a period of one week was noted. Rigid adherence to his diet afforded relief.

A review of the patient's past history did not reveal anything unusual. There was no history of scarlet fever, frequent sore throats, facial edema, hematuria, oliguria, nocturia, headache, or visual disturbance.

Physical examination revealed a moderate degree of tenderness in the epigastrium. Numerous plaque-like formations were found in the adjacent conjunctiva just below the epithelium (Fig.). The fundi were normal. With the slit lamp, a heavy deposit of calcium in the medial and lateral margins of both corneas was seen, the accumulation being heaviest in the limbus. Band keratitis was not present.

A moderate degree of anemia was found. The urine was alkaline, with a specific gravity of 1.001, and contained a trace of albumin and 2 to 3 erythrocytes per high power field. The serum calcium level was 9.2 mg. per 100 cc.; the chlorides, 380, and the phosphorus, 4.8. The carbon dioxide combining power was 77 vol. %, and the alkaline phosphatase was 4.8 units per 100 cc. A roentgenogram of the lungs revealed a fibrocalcific area in the upper lobe of the right lung. A roentgenologic skeletal survey was normal.

The patient was placed on a strict Sippy diet, and aluminum hydroxide and tincture of belladonna were administered to the point of tolerance. Rapid relief from symptoms was obtained. On July 7, 1949, the serum calcium level was 11.5 mg. per 100 cc.; the phosphorus, 3.2, and the chlorides, 460. The carbon dioxide combining power was 44 vol. %. Urinalysis was essentially the same as upon the previous occasion. A gastrointestinal series revealed a deformity of the duodenal cap and a moderate amount of gastric retention. A mottled, dense area of calcification lay just above the transverse process of the fourth lumbar vertebra.

Aspiration of fasting gastric contents on three occasions yielded 200 to 300 cc. of fluid containing 34 to 74 degrees of free hydrochloric acid. Tubercle bacilli could not be isolated from the gastric contents. Repeated determinations of the nonprotein nitrogen content of the blood revealed a value as high as 232 mg per 100 cc. The two-hour output of sulfobromophthalein was 22.5%. The retrograde pyelogram was normal.

In this case a definite, prolonged history of the intake of milk and absorbable alkali was obtained. Calcinosis was manifested by deposition of calcium in the eyes and in the lumbar region Hypercalcemia, normal serum phosphorus and serum alkaline phosphatase levels, mild alkalosis, and a severe degree of renal impairment were found.

The treatment of choice for this patient was partial gastrectomy to cure the duodenal ulcer, although the risk of operation was greater than normal. A satisfactory decline of the value for nonprotein nitrogen in the blood was noted during the period preparatory for operation. A partial gastrectomy was done on Aug. 17. The postoperative course was uneventful, and the patient was discharged on Sept. 9.

The patient was readmitted on Nov. 25 because a follow-up roentgenogram of the lungs revealed a small area of infiltration in the left first interspace. He had not experienced symptom from the duodenal ulcer in the interim. The ocular calcific deposits were still present. The serum calcium level was 11.6 mg per 100 cc.; the phosphorus, 3.4, and the nonprotein nitrogen 38. The urine contained a trace of albumin, rare white blood cells and occasional granular casts. Concentration of the urine to a maximum specific gravity of only 1.013 could be obtained The sulfobromophthalein excretion was 40% in two hours Repeated gastric washings did not yield tubercle bacilli.

Results of treatment for pulmonary tuberculosis were good Over a period of four months the patient gained 7.3 kg. (16 lb in weight. His temperature and pulse rate were normal. Toward the end of this period, the two-hour excretion of sulfobromophthalein increased to 53%. The maximum specific gravity of the urine was 1.013. The serum calcium level was 10 mg. per 100 cc.; the phosphorus, 4, and the nonprotein nitrogen, 46. No change occurred in the ocular deposits of calcium. The patient was discharged on March 31, 1950, to be followed by h local physician.

After the treatment described, improvement in renal functio occurred, as evidenced by the return of the nonprotein nitroge

---

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

[1] Burnett, C. H.; Commons, R. R.; Albright, F., and Howard, J. E.: Hypercalcemia Without Hypercalcuria or Hypophosphatemia, Calcinosis and Renal Insufficiency, Syndrome Following Prolonged Intake of Milk and Alkali, New England J. Med. **240**: 787-794 (May 19) 1949.

to normal limits and the increased excretion of sulfobromophthalein in two hours. Residual renal damage was demonstrated by the persistent low maximal specific gravity of the urine. The value for the serum calcium returned to normal. Calcium deposition in the eyes and in the lumbar region was not altered.

SUMMARY

A case of abnormal calcium deposition and hypercalcemia due to prolonged treatment of a duodenal ulcer with milk and absorbable alkali is reported. The duodenal ulcer was successfully treated by a gastric resection. There was concurrent improvement in renal function.

Veterans Administration Hospital (Dr. Miller).

HYPEROSTOSIS FRONTALIS INTERNA

TWO CONTRASTING CASES

Sherwood Moore, M.D.
and
Archie D. Carr, M.D., St. Louis

It is assumed that the reader is familiar with the salient features of hyperostosis frontalis interna; therefore, discussion of the condition and its accompanying symptom complex will be omitted. A full description can be found in Henschen's classic monograph, "Morgagni's Syndrome."

The two case histories briefly given here are interesting because of their unusual courses, and the variation of development of the hyperostosis.

REPORT OF CASES

Case 1.—The first patient was admitted to the Barnes Hospital in March, 1928. She was a thin, white, 22-year-old married woman, complaining chiefly of a severe headache. On examination a doubtful nystagmus and a slight bilateral increase of the patellar reflexes were observed. Lumbar puncture disclosed no abnormalities. The late Prof. Sidney Schwab suggested the diagnosis of toxic irritation of the nervous system (frequently the symptoms associated with hyperostosis frontalis interna resemble those of mild chronic intoxication). A diagnosis of encephalitis was made, which was questionable. The patient was readmitted in November, 1936, for recurring upper respiratory infection and headache. At this time, there was nothing notable in the history. The patient entered the hospital again in April, 1940, for recurring upper respiratory infection and dizzy spells, which had been occurring for six weeks, and which had caused her to fall. She was admitted a fourth time in February, 1944, for hysterectomy for toxemia of pregnancy. There was a macrocytic, hyperchromic anemia, paresthesias, and slight incoordination of the extremities.

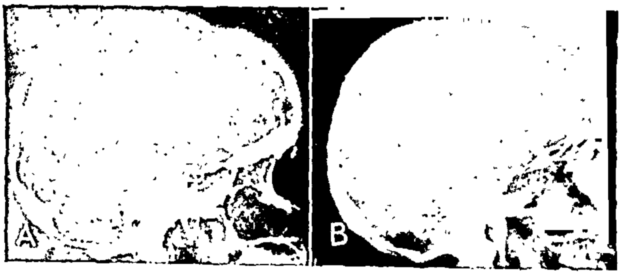


Fig. 1 (Case 1).—*A*, the skull in 1928. *B*, the skull in 1950.

The fifth and last admission was in January, 1950. In the interim, the patient's health had been fairly good. She entered because of a series of severe headaches, frontal and vertex in type, of sudden onset, and of one hour's duration. These had been accompanied by an intense sense of fear and a rise in blood pressure to 200+ mm. Hg, followed by tenderness over the scalp lasting for several days. There was a complicating, severely painful subdeltoid bursitis with calcification on the left, and slight pain in the corresponding region of the right side. There were no other well-defined objective findings, except those in the roentgenograms of the skull.

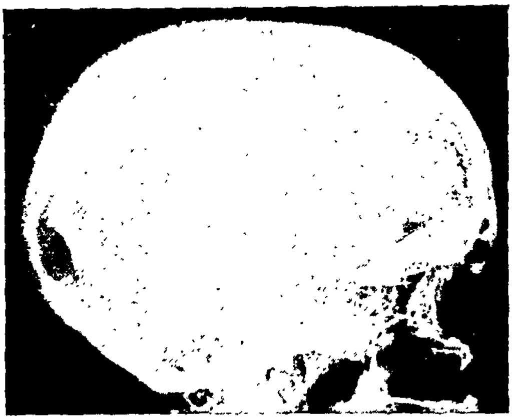


Fig. 2 (Case 2).—The skull.

The roentgen examination in 1928 (Fig. 1A) was reported as showing circumscribed areas of increased density in the frontal bone, with thickening of the orbital plate. At that time we had no knowledge of the condition now so widely known as hyperostosis frontalis interna. The syndrome consists of a more or less constant combination of headache, obesity, and functional disorders of the central nervous system. In women it is sometimes associated with a male distribution of facial hair-growth; this sign was absent in both cases reported here.

The roentgenogram made in 1950, 22 years later (Fig. 1B), showed the nodules of hyperostosis frontalis interna still present, combined with a diffuse hyperostosis of the vault of the skull. In the first film the orbital plate of the frontal bone was greatly thickened, whereas in the second film it was of normal thickness. At neither examination was there alteration of the sella turcica.

Case 2.—The second patient, a Negro woman, 55, has been under observation for approximately three years. She reported to the clinic because of intense, constant headaches, which she had experienced since the birth of her child eight years before. The objective findings were obesity and an extensive hypertrophic arthropathy of both knee joints, probably caused by her excessive weight: 311 lb. (141 kg.+). She was an unstable person but lacked any well-marked psychic deviation. At the first examination roentgenograms of the skull showed nothing abnormal except a slightly enlarged, or "balloon" sella turcica.

There was no evidence of hyperostosis. Three years later however, well-defined hyperostosis frontalis interna was apparent (Fig. 2). This observation confirms the opinion of Dr. Carr that roentgen demonstration of hyperostotic changes in the skull is not essential to the diagnosis of metabolic craniopathy, the inclusive term for the four types of hyperostosis.

COMMENT

Here are two strongly contrasting cases: one a thin, 22-year-old white woman, and the other an enormously obese Negro woman 55 years of age whose symptoms began about the time of the menopause. Many writers are of the opinion that hyperostosis frontalis interna is a physiological process incident to the menopause. The first case study refutes this opinion, as does the fact that the condition, though rare, may be found in the male.

Professor Emeritus of Radiology (Dr. Moore), and Assistant Professor of Clinical Neurology (Dr. Carr), Washington University School of Medicine.

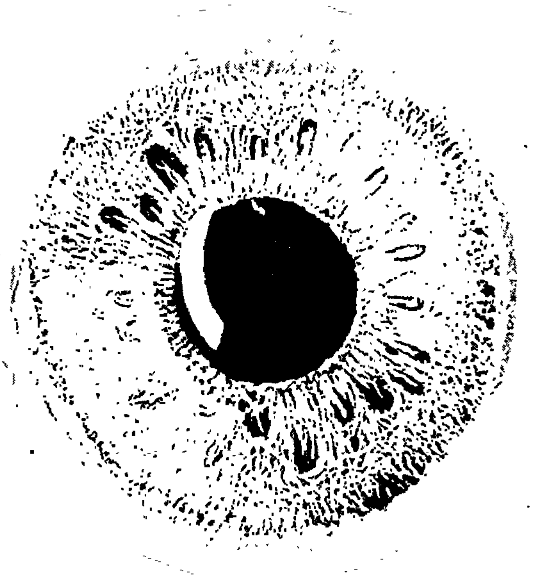
CALCINOSIS DUE TO TREATMENT OF DUODENAL ULCER

Joseph M. Miller, M.D.
Irving Freeman, M.D.
and
William H. Heath, M.D., Fort Howard, Md.

In 1949, Burnett, Commons, Albright, and Howard[1] reported six cases of hypercalcemia, calcinosis, and renal insufficiency, without hypercalciuria or hypophosphatemia, in patients with a history or symptoms of peptic ulcer, who had received excessive amounts of milk and absorbable alkali. The following case demonstrates many of the features of this syndrome.

REPORT OF A CASE

A 41-year-old white man was admitted to the Veterans Administration Hospital, Fort Howard, Md., on June 26, 1949, complaining of weakness, nausea, and vomiting, of three to four days' duration. He had noted epigastric pain in September, 1942, while in the United States Navy. Relief had been obtained from self-medication with about a quart of milk a day. He was admitted to a hospital while in service for pain and swelling of the left arm. While there he asked for sodium bicarbonate and milk to relieve his epigastric pain, and investigation revealed a duodenal ulcer. The patient was put on a Sippy No. 1 diet in September, 1942, and then progressively advanced to other ulcer diets until January, 1943, when he was discharged from the Navy because of his duodenal ulcer.



Drawing of iris and limbus as region appeared through slit lamp. Calcium deposits from irregular crescents between 2 and 4 and 7 and 9 o'clock.

The patient returned to his civilian occupation and continued to eat a modified diet, but since he was not under the care of a physician, the nature of the modifications could not be determined. He remained fairly well until March, when he experienced a return of mild epigastric pain. His milk consumption at that time averaged about four to five glasses a day, and he took about ½ teaspoon of sodium bicarbonate every night and sometimes twice a night. By the winter of 1944 he was taking at least one teaspoon of sodium bicarbonate twice a day. In December of 1948 extreme weakness, syncope, and the passage of tarry stools over a period of one week was noted. Rigid adherence to his diet afforded relief.

A review of the patient's past history did not reveal anything unusual. There was no history of scarlet fever, frequent sore throats, facial edema, hematuria, oliguria, nocturia, headache, or visual disturbance.

Physical examination revealed a moderate degree of tenderness in the epigastrium. Numerous plaque-like formations were found in the adjacent conjunctiva just below the epithelium (Fig.). The fundi were normal. With the slit lamp, a heavy deposit of calcium in the medial and lateral margins of both corneas was seen, the accumulation being heaviest in the limbus. Band keratitis was not present.

A moderate degree of anemia was found. The urine was alkaline, with a specific gravity of 1.001, and contained a trace of albumin and 2 to 3 erythrocytes per high power field. The serum calcium level was 9.2 mg. per 100 cc.; the chlorides, 380, and the phosphorus, 4.8. The carbon dioxide combining power was 77 vol. %, and the alkaline phosphatase was 4.8 units per 100 cc. A roentgenogram of the lungs revealed a fibrocalcific area in the upper lobe of the right lung. A roentgenologic skeletal survey was normal.

The patient was placed on a strict Sippy diet, and aluminum hydroxide and tincture of belladonna were administered to the point of tolerance. Rapid relief from symptoms was obtained. On July 7, 1949, the serum calcium level was 11.5 mg. per 100 cc.; the phosphorus, 3.2, and the chlorides, 460. The carbon dioxide combining power was 44 vol. %. Urinalysis was essentially the same as upon the previous occasion. A gastrointestinal series revealed a deformity of the duodenal cap and a moderate amount of gastric retention. A mottled, dense area of calcification lay just above the transverse process of the fourth lumbar vertebra.

Aspiration of fasting gastric contents on three occasions yielded 200 to 300 cc. of fluid containing 34 to 74 degrees of free hydrochloric acid. Tubercle bacilli could not be isolated from the gastric contents. Repeated determinations of the nonprotein nitrogen content of the blood revealed a value as high as 232 mg. per 100 cc. The two-hour output of sulfobromophthalein was 22.5%. The retrograde pyelogram was normal.

In this case a definite, prolonged history of the intake of milk and absorbable alkali was obtained. Calcinosis was manifested by deposition of calcium in the eyes and in the lumbar region. Hypercalcemia, normal serum phosphorus and serum alkaline phosphatase levels, mild alkalosis, and a severe degree of renal impairment were found.

The treatment of choice for this patient was partial gastrectomy to cure the duodenal ulcer, although the risk of operation was greater than normal. A satisfactory decline of the value for nonprotein nitrogen in the blood was noted during the period preparatory for operation. A partial gastrectomy was done on Aug. 17. The postoperative course was uneventful, and the patient was discharged on Sept. 9.

The patient was readmitted on Nov. 25 because a follow-up roentgenogram of the lungs revealed a small area of infiltration in the left first interspace. He had not experienced symptoms from the duodenal ulcer in the interim. The ocular calcific deposits were still present. The serum calcium level was 11.6 mg. per 100 cc.; the phosphorus, 3.4, and the nonprotein nitrogen, 38. The urine contained a trace of albumin, rare white blood cells and occasional granular casts. Concentration of the urine to a maximum specific gravity of only 1.013 could be obtained. The sulfobromophthalein excretion was 40% in two hours. Repeated gastric washings did not yield tubercle bacilli.

Results of treatment for pulmonary tuberculosis were good. Over a period of four months the patient gained 7.3 kg. (16 lb.) in weight. His temperature and pulse rate were normal. Toward the end of this period, the two-hour excretion of sulfobromophthalein increased to 53%. The maximum specific gravity of the urine was 1.013. The serum calcium level was 10 mg. per 100 cc.; the phosphorus, 4, and the nonprotein nitrogen, 46.5. No change occurred in the ocular deposits of calcium. The patient was discharged on March 31, 1950, to be followed by his local physician.

After the treatment described, improvement in renal function occurred, as evidenced by the return of the nonprotein nitrogen

---

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

[1] Burnett, C. H.; Commons, R. R.; Albright, F., and Howard, J. E.: Hypercalcemia Without Hypercalcuria or Hypophosphatemia, Calcinosis and Renal Insufficiency, Syndrome Following Prolonged Intake of Milk and Alkali, New England J. Med. 240: 787-794 (May 19) 1949.

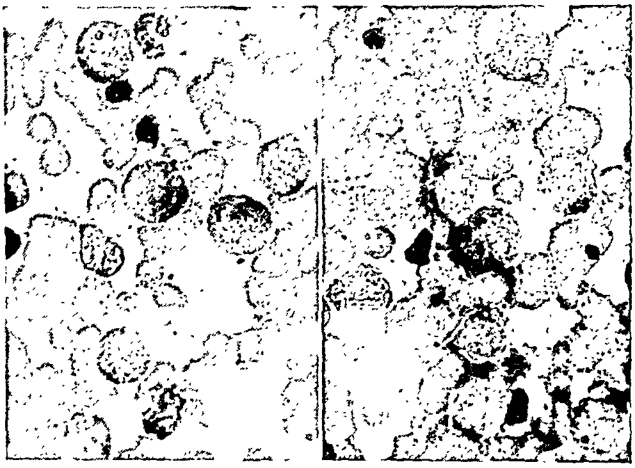
tender, 2 fingerbreadths below the costal margin. The spleen was not palpable. There was no obvious peripheral edema. The eyes showed a corneal arcus. Funduscopic examination disclosed many tiny, yellow, and hemorrhagic areas of exudate. There was marked tortuosity, narrowing, and irregularity of the arterioles. The discs were normal.

The most striking laboratory observations on admission were found in the blood. The peripheral white blood cell count was 4,500, with an almost complete absence of neutrophils. There was also a slight hypochromic anemia. The platelets numbered 380,000 per cubic millimeter. A sternal bone marrow study was also abnormal, disclosing a preponderance of neutrophilic myelocytes. It was interpreted as showing a maturation arrest of the myeloid series (See figure). The results of peripheral blood and bone marrow examinations at various intervals during the patient's hospitalization are shown in Tables 1 and 2. The urinalyses were characterized by a heavy trace of protein and a specific gravity of not more than 1.016. Microscopic examination disclosed many hyaline, fine, and coarse granular casts. Urinary tests for sugar were negative, and there was no Bence-Jones protein in the urine. The serum chloride value was 534 mg. per 100 cc.; serum cholesterol 422 mg. per 100 cc.; serum protein 4.7 gm., with the albumin 2.05 gm. and the globulin 2.65 gm. per 100 cc.; fasting blood sugar was 70 mg., and the blood urea 49 mg. per 100 cc. A blood Kahn test for syphilis was negative. An electrocardiogram indicated a depression of the RS-T segment and inverted T wave in the standard leads. These findings were interpreted as indicating digitalis effects superimposed on myocardial ischemia. A roentgenogram of the chest showed evidence of a small amount of fluid in both pleural cavities. The heart was moderately enlarged in all of its diameters.

It was now apparent that the patient was suffering from a blood dyscrasia. Therapy was therefore directed toward this disturbance. A whole blood transfusion of 400 cc. was slowly administered, and three smaller transfusions of 250 cc. each were given over the next 10 days. In addition, the patient received 400,000 units of procaine penicillin and five units of crude liver extract intramuscularly each day. Since mercury was suspected as a possible cause for the blood disturbance, the use of mercurial diuretics was discontinued, but the administration of all other medications used prior to admission (digitalis, multivitamin capsules, morphine injection, and pentobarbital sodium) was continued. Improvement was soon observed in the peripheral blood (Table 1). The white cell blood count rose to 8,000 per cu. mm., the neutrophils, from almost total absence, rose to 61%, and the hemoglobin from 10.5 gm. to 16 gm. per 100 cc. In spite of this hematologic improvement, however, the problem of congestive circulatory failure remained. There was increased difficulty in breathing, and edema of the lower extremities was now evident. In the past, the patient had always responded with good diuresis following an injection of a mercurial. With some hesitation, realizing the risk of an allergic reaction, it was decided to continue this treatment but to avoid the particular kind of mercurial diuretic used just prior to admission. Accordingly, meralluride injection was administered in 1 cc. doses intramuscularly on Oct. 3 and Oct. 4, 1950. The temperature promptly rose to 101 F, and the patient was unusually restless and irritable. The peripheral blood on Oct. 6 showed a white blood cell count of 3,200 per cu. mm. with 6% neutrophils. The red blood cell count was normal, and the hemoglobin was 15.3 gm. per 100 cc. It should be pointed out that the blood cell count a few days before the administration of the meralluride injection showed a white cell count of 8,000 per cubic millimeter with 45% neutrophils, and it should be emphasized that no other new medication, except the meralluride injection, was added during this period. Further blood counts over the next few days showed a prompt return to normality (Table 1). The circulatory state, however, remained poor, and on Oct. 9, three and one-half weeks after admission, the patient suddenly went into left ventricular heart failure. He became ashen gray; the pulse was rapid and thready. Oxygen and morphine were administered, and the digitalis was increased. Although he gradually recovered from shock, there was further evidence of advanced congestive failure. On Oct. 17 mercaptomerin was administered subcutaneously in a dose of 1 cc. The peripheral blood showed no significant changes, but the patient's general condition seemed somewhat improved. He was afebrile. After the last injection of mercaptomerin, a fair diuretic response was observed, but his general condition was still not satisfactory. He left the hospital against advice on Oct. 20, and died of heart failure at home on Oct. 24. Autopsy was not performed.

COMMENT

Considering the importance and widespread use of the organic mercurial compounds, it is surprising that there have been only isolated observations of the bone marrow in patients receiving this heavy metal. Agranulocytosis has been reported to follow the administration of such metals as gold, radium, arsenic, arsphenamine, neoarsphenamine, bismuth, radium, and radioactive substances.[2] The bone marrow apparently becomes sensitized to these metals and acts as a shock organ. Various patterns of the bone marrow have been described by different observers in agranulocytosis. Fitz-Hugh and Krumbhaar [3] first called attention to the hyperplastic state of the bone marrow, with arrest of cell development at the myelocyte level. They used the term "maturation arrest" to describe this condition. Occasionally, however, an aplastic marrow is found, especially in fatal cases. As Dameshek pointed out,[2a] the different patterns described in the bone marrow are probably due to the variations in the severity of the disease and to the fact that the observations of the marrow were made at different times in the course of the disease.



Photomicrograph of bone marrow showing a preponderance of myelocytes, the so-called maturation arrest stage (× 234).

A chronically ill patient receiving treatment for congestive circulatory failure is usually exposed to a multitude of medications. If in such a patient agranulocytosis develops it is not always easy to discover which drug is responsible. Agranulocytosis following the administration of the mercurial diuretics is extremely rare, and to date there has been only one experience reported.[4] Because of this rarity the causal role of the mercurial diuretics was not considered in our patient until he was admitted to the hospital. The common causes of agranulocytosis, such as sensitivity to the aminopyrine or sulfonamides, were carefully considered, but there was no history of any recent exposure to these drugs. Of course, the patient may have taken some aminopyrine compound without our knowledge, but we believe this to be unlikely, since all the medication was dispensed under the guidance of either a physician or a nurse. In this case, a relationship to the mercurial diuretics seemed plausible for the following reasons. On admission to the hospital, when the patient showed profound neutropenia, the *only* drug that was discontinued was the mercurial diuretic. A prompt recovery followed. This improvement was, of course, probably enhanced by the blood transfusions and antibiotics. Later, when the blood was again normal, a mercurial diuretic was administered. A dramatic drop of the neutrophils was again demonstrated. There was also an associated general body reaction, with a slight rise in temperature.

---

[2] (*a*) Dameshek, W.: Agranulocytosis, Oxford Medicine, New York, Oxford University Press, 1949, vol. 2, chap. 22a, p. 848. (*b*) Kracke, R. R., and Garver, H. E.: Diseases of the Blood and Atlas of Hematology with Clinical and Hematologic Descriptions of the Blood Diseases Including a Section on Technic and Terminology, chap. 12, Philadelphia, J. B. Lippincott Company, 1937.

[3] Fitz-Hugh, T., Jr., and Krumbhaar, E. B.: Myeloid Cell Hyperplasia of the Bone Marrow in Agranulocytic Angina, Am. J. M. Sc. 183: 104, 1932.

[4] Bender, C. E.; Hoxsey, R. J., and DeMarsh, Q. B.: Neutropenia in a Patient Treated with a Mercurial Diuretic and Its Response to BAL, Ann. Int. Med. 33: 1285, 1950.

TABLE 1.—*Peripheral Blood Cell Counts During Hospitalization*

Date	Hgb.,* Gm./ 100 Cc.	RBC (× 10⁶)	WBC	Segmented Polymorphonuclears	Band Cells	Myelocytes	Lymphocytes	Monocytes	Eosinophils	Basophils	Remarks †
9/13	10.5	3.8	4,500	2	2	..	76	19	..	1	Mercurial diuretics
9/14	11.9	4.0	4,100	5	2	12	67	14	..	..	omitted; antibiotics, liver extract,
9/18	14.6	4.6	5,500	7	1	6	59	27	..	..	and four trans-
9/20	14.3	4.6	5,300	19	7	2	53	18	..	..	fusions admin-
9/25	16.0	4.8	7,500	50	11	..	30	9	..	..	istered
10/ 1	15.8	5.04	8,000	44	1	..	42	12	1	..	
10/ 3	....	...	.....	..	..	..	..	..	..	..	1 cc. meralluride administered
10/ 4	....	...	.....	..	..	..	..	..	..	..	1 cc. meralluride administered
10/ 6	15.3	5.02	3,200	6	..	..	94	..	..	..	....
10/ 9	....	...	24,000	72	22	..	6	..	..	..	....
10/11	15.8	4.8	14,600	87	3	..	10	..	..	..	....
10/14	11.8	4.2	29,400	78	15	..	17	..	..	..	....
10/17	11.8	4.0	13,500	87	2	..	10	..	1	..	1 cc. mercaptomerin administered
/18	11.8	4.0	.....	70	20	..	2	..	8	..	....
/19	11.8	...	13,000	75	5	..	17	..	..	..	....
10/20	13.2	4.0	14,500	73	3	..	20	..	1	1	Died 10/24/50

* Photoelectric technique. † Platelet count 9/13/50: 380,000 per cubic millimeter.

The outstanding symptoms in our patient were the debilitating fatigue and malaise. In a patient receiving mercurials, these symptoms may direct the clinician to the possibility of a salt depletion syndrome. The high temperature and acute sore throat commonly present in agranulocytosis were not present in our patient. The importance of doing routine blood cell counts in such a case is obvious. Regardless of how recently a blood cell count has been taken, this study should be repeated if unusual weakness or signs of sepsis develop. A marked reduction of the neutrophils is diagnostic cytosis. Usually there is little or no anemi platelets are normal. However, since such p chronically ill, an unrelated mild anemia may be

Three types of mercurial diuretics were used patient to promote diuresis, namely mersaly theophylline injection, meralluride injection, and mer tomerin sodium. The neutropenia was observed w the patient was receiving mersalyl and theophylline inj tion and again demonstrated after the use of merallur *injection*, but it was not seen when mercaptome sodium was prescribed. Mercaptomerin sodium been used successfully almost continuously for one ye Chemically, mercaptomerin sodium differs from other two preparations in that the theophylline radi is replaced by a mercaptide. It is interesting to note experimentally, mercaptomerin sodium has been fo to be 160 to 200 times less toxic when administered in venously in animals.[5]

The various untoward effects observed after admi tration of mercurial diuretics follow no set pattern are caused by several mechanisms. Clinically, a variety of reactions have been observed.[6] Acute curial poisoning is extremely rare.[7] The immediate reactions occasionall direct toxic effect of follow the intravenous this reason intraveno should be used with reactions from the merc

TABLE 2.—*Bone Marrow Counts*

	Sept. 16	Oct
Promyelocytes	1	[illegible]
Myelocytes	38	[illegible]
Metamyelocytes	6	[illegible]
Band cells	3	[illegible]
Polymorphonuclear neutrophils	1	[illegible]
Eosinophils	0	[illegible]
Basophils	1	[illegible]
Lymphocytes	24	[illegible]
Normoblasts	22	[illegible]
Pronormoblasts	1	

---

[5] Lehman, R. A.: 'Further Studies on the Acute Toxicity of Mercurial Diuretics, Proc. Soc. Exper. Biol. & Med. **64**: 428, 1947.

[6] Higgins, W. H.: Acute Toxic Effects of Mercurial Diuretics, J. A. M. A. **119**: 1182 (Aug. 8) 1942. DeGraff, A. C., and Nadler, J. E.: A Review of the Toxic Manifestations of Mercurial Diuretics in Man, J. A. M. A. **119**: 1006 (July 25) 1942. Wexler, J., and Ellis, L. B.: Toxic Reactions to Intravenous Injection of Mercurial Diuretics, Am. Heart J. **27**: 86, 1944. Volini, I. F.; Levitt, R. O., and Martin, R.: Studies on Mercurial Diuresis: Sudden Death Following Intravenous Injection: A Report of 3 Cases, with Electrocardiographic Studies in 2, J. A. M. A. **128**: 12 (May 5) 1945. Kline, E. M., and Seymour, W. B.: Systemic Reactions to Mercurial Diuretics, Am. J. M. Sc. **203**: 874, 1942. Ben-Asher, S.: On the Toxicity of the Mercurial Diuretics: Observations on 18 Cases with Suggestions for the Prevention of Toxic Reactions, Ann. Int. Med. **25**: 711, 1946.

[7] Derow, H. A.: Acute Mercury Poisoning *Following* the Use of Salyrgan (Mersalyl), in Medical Papers Dedicated to Henry Asbury Christian, Baltimore, The Waverly Press, 1936, p. 261.

mobilization of digitalis, water, and electrolytes. The salt depletion syndrome may result from a too vigorous dehydrating program.[8] A number of reactions also result from an allergic response to a specific organic compound. Many nonfatal reactions, such as urticaria, dermatitis, fever, and bronchial asthma, may be examples of this type of response.[9] Changing from one preparation to another is often sufficient to abolish the reaction, but not necessarily so. In this regard, Fox, Gold, and Leon [9b] described an allergic disturbance following the intravenous use of mercurophyllin injection (mercupurin,® now known as mercuzanthin®) and again following use of a mercurophyllin suppository. Only mild reactions, however, were encountered after use of mersalyl and inorganic mercurials.

Because of the beneficial effects of dimercaprol injection (BAL) in arsenic and mercury poisoning, Bender, Hoxsey, and DeMarsh [4] used it in the treatment of a patient with neutropenia following mercurophyllin administration. A striking improvement was noted in both the peripheral blood and the bone marrow following the use of dimercaprol. However, since agranulocytosis sometimes responds favorably once the offending drug itself is discontinued, one cannot be positive of the role of dimercaprol in effecting the response. Moreover, the reaction is more in the nature of an idiosyncrasy than direct mercurial poisoning.

SUMMARY AND CONCLUSIONS

An unusual depression of the white blood cells is reported in a patient under treatment for congestive circulatory failure with mercurial diuretics. Mersalyl and theophylline injection (solution salgyran®-theophylline) and meralluride injection ("mercuhydrin") were believed to be responsible for this reaction, which was not observed following the use of mercaptomerin (thiomerin®) sodium. At the height of the disorder, the peripheral blood was characterized by severe neutropenia and the bone marrow by a maturation arrest of the granulocyte series at the myelocyte stage. The mercurial diuretics should be added to the list of drugs capable of producing agranulocytosis.

100 Central Ave. (Dr. Silverman).

---

8. Schroeder, H. A.: Renal Failure Associated with Low Extracellular Sodium Chloride: Low Salt Syndrome, J. A. M. A. **141**: 117 (Sept. 10) 1949.

9. (*a*) Scherf, D., and Boyd, L. J.: Cardiovascular Diseases, Philadelphia, J. B. Lippincott Company, 1947. (*b*) Fox, T. T.; Gold, H., and Leon, J.: Hypersensitiveness to a Mercurial Diuretic, with Observations on Its Mechanism, J. A. M. A. **119**: 1497 (Aug. 29) 1942.

Aureomycin and the Intestinal Flora.—The diarrhea observed in patients treated with aureomycin for a period of three or more days may not be a toxic manifestation of the drug, but rather an expression of the profound effect this drug has on the intestinal flora. In this respect it is similar to terramycin, or for that matter, any combination of chemotherapeutic agents that are markedly active against both gram-positive and gram-negative aerobic and anaerobic bacteria of which the intestinal flora are comprised. Oftentimes, patients treated with these broad spectrum antibiotics for a period of three days or more show nothing but pure cultures of yeast in their stools. Not infrequently the stools become loose, lose their normal odor, and the patient complains of pruritus ani. The latter is probably due to the abnormal shift of the bacteria flora to the acid-producing yeasts.—Henry Welch, M.D., Pharmacology of Antibiotics, *Journal of the History of Medicine and Allied Sciences*, Summer, 1951.

GENERALIZED URTICARIA WITH ELECTROCARDIOGRAPHIC CHANGES SIMULATING MYOCARDIAL INFARCTION

Robert F. Foster, M.D.
and
James D. Layman, Jr., M.D., Seattle

A review of the literature reveals that acute cardiac manifestations in association with urticaria are uncommon; however, it has been observed that definite cardiac changes may accompany allergic reactions. The report of the following case illustrates electrocardiographic changes simulating myocardial infarction that occurred during the course of urticaria.

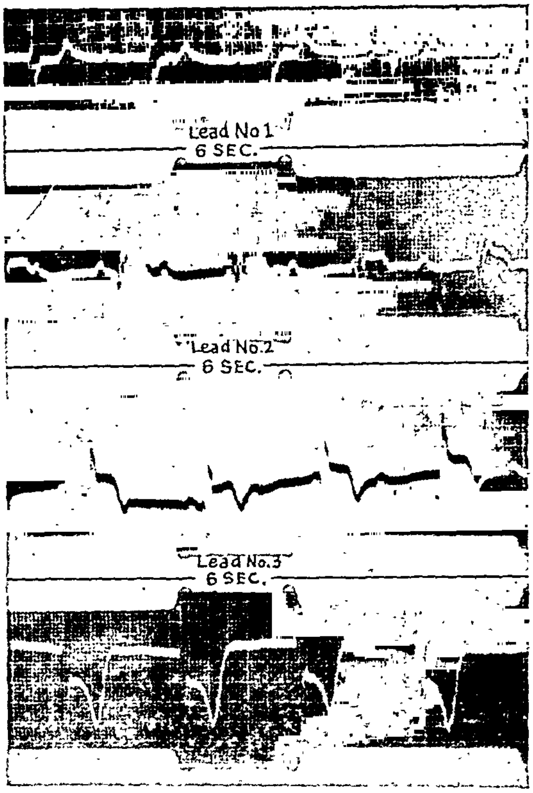


Fig. 1.—Electrocardiogram in case reported on admission of patient.

REPORT OF A CASE

History.—A white woman, 65, entered Providence Hospital on April 13, 1946, with the complaint of shortness of breath and hives. For the preceding two weeks her family physician had treated her with intravenously administered "cincosal" (sodium cinchophen, 1 gm., sodium salicylate, 1 gm., and sodium iodide, 0.5 gm., in 20 cc.) for arthritis. The contraindications to the use of "cincosal" are stated to be impaired heart action, syphilis, liver impairment or susceptibility to liver disease, tuberculosis, or thyroid disease. This was the only medication. Seven days before admission she noted itching of the scalp followed by a rash at the hairline. On the same day she was vaccinated for smallpox, and hives later developed over the entire body. "Cincosal" injections were continued. On the day of admission she suddenly experienced shortness of breath but had no chest pain or discomfort. The past history was noncontributory, and there had been no allergic manifestations in the past.

Clinical Observations.—Examination revealed a dyspneic, obese and cooperative white woman with a temperature of 98 F. The blood pressure was 140/90 and pulse 80, regular. There was

From the Department of Cardiology, Providence Hospital.

a generalized urticarial rash of moderate intensity on the arms and trunk. The chest was symmetrical, with equal bilateral expansion. There was slight dulness and rales in the bases posteriorly. The heart tones were good. The heart size could not be determined on physical examination because of obesity and large breasts. The abdomen was normal except for pronounced obesity. Otherwise the general examination was essentially normal.

Laboratory Data.—Initial laboratory tests revealed hemoglobin 82.7% (12 gm.), erythrocytes 4,080,000, leucocytes 8,100, polymorphonuclear neutrophils 73%, eosinophils 2%, lymphocytes 19%, and monocytes 6%. A voided urine specimen showed a specific gravity of 1.021, pH 7.9, no sugar or albumin, pus cells 2 to 4 per high-power field, along with a few epithelial cells, bacteria, and amorphous material. A miniature roentgenogram of the chest, taken April 16, 1946, was reported negative, and a Graham-Cole test, taken April 14, 1946, revealed a normally functioning gallbladder. An electrocardiogram (Fig. 1) taken on the second day after admission indicated complete auriculoventricular dissociation, with an auricular rate of 94 and ventricular rate of 50. The QRS intervals measured 0.12 second with pronounced deformity; the T waves in lead 2 were monophasic and in leads 3 and 4 inverted, with elevation of the ST segments; Q waves were present in leads 2 and 3. It was concluded that there was third-degree heart block with dissociation of auricles and ventricles, and intraventricular blocking with features suggesting myocardial infarction posterior type, atypical. The tentative diagnosis of the attending physician and a consultant wa painless coronory occlusion.

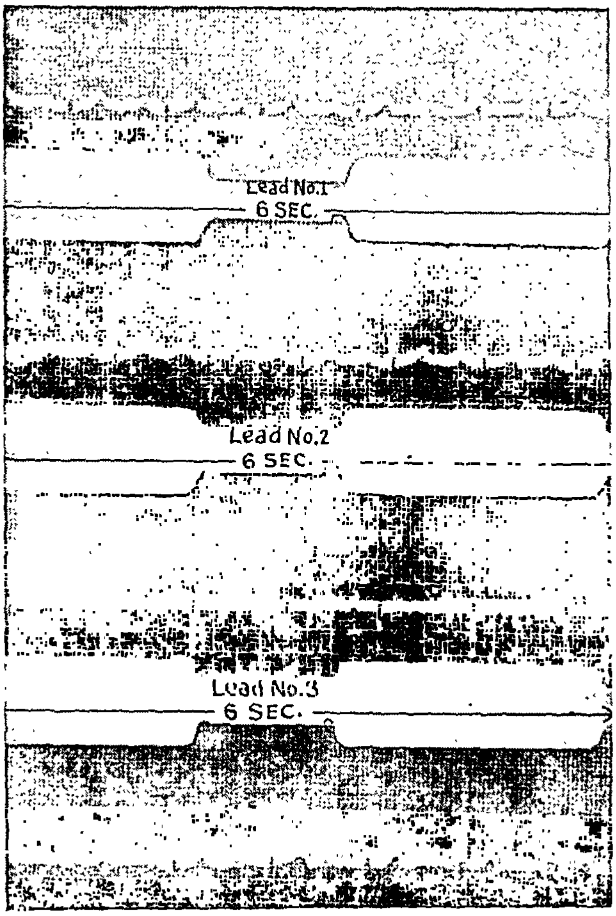


Fig. 2.—Electrocardiogram in case reported 14 days after admission.

Course.—On admission the patient was treated by bed rest aminophylline, ammonium chloride, and dihydromorphino (dilaudid®) hydrochloride. The rash disappeared on the thir day after the patient's admission. The dyspnea persisted intermittently for six days. The patient complained of chest pain o one occasion and required dihydromorphinone. After the disappearance of dyspnea, the remainder of the course was entirel normal. Fourteen days after admission, and 12 days after th original electrocardiogram, another tracing (Fig. 2) indicate first-degree heart block, but was otherwise normal.

COMMENT

A review of the literature reveals little concernin cardiac manifestation of allergy. Pathologically it ha been shown that allergic processes occur in and abou cardiac vessels with eosinophilic infiltration, but this typ may be histologically indistinguishable from processes o a different origin. In 1910 Auer and Lewis[1] showed tha anaphylaxis could cause conduction disturbance in th heart of the guinea pig, and Auer and Robinson[2] in 191 showed by animal experimentation that it could produce heart block with associated electrocardiographi changes. A similar mechanism could exist in man. Criep in 1931, again working with animals, showed tha asphyxia and anaphylaxis had the same effect on cardia mechanism and that the changes in T waves were no unlike those found in coronary occlusion. He conclude that anoxemia might be the source of mechanis changes. Further, Wilcox and Andrus[4] proved tha guinea pig hearts sensitized to horse serum, on exposu to a small amount of antigen, had reduced blood flo through the coronary arteries, thereby verifying Criep conclusion.

There have been reports of arrhythmias of allerg etiology in man, one of the latest being by Lilienfeld an associates,[5] who discuss a case of acute myocarditis an right bundle branch block due to sulfonamide sens tivity. Paroxysmal tachycardia[6] and extrasystoles[7] hav been shown to be associated with an allergic phenomeno in some cases. Sherman[8] stated that existence of a dru allergy could be determined by two criteria, namel demonstration of antibodies and the occurrence of sym toms typical of allergic disease, such as asthma, rhiniti urticaria, or contact dermatitis. The case discussed fu fils the criteria by the urticarial manifestations.

Although this patient had generalized urticaria an it might be assumed that she had a similar process in th heart, the electrocardiogram was interpreted as showi acute myocardial infarction. However, the fact that th electrocardiogram became normal, except for first-degre heart block, suggests that this was not acute myocardi infarction; since in the latter disease the electrocardi graphic changes do not revert to normal for sever weeks, months, or years. The majority of cases sho permanent electrocardiographic evidence of previo myocardial infarction. In this case the electrocardiogra returned to approximately normal in 12 days, or eig days after the clearing of the rash and urticaria. T rapid disappearance of electrocardiographic changes al argues against the possibility that cinchophen had a dire toxic rather than an allergic effect on the myocardiu since recovery from toxic myocarditis is slow. It was fe therefore, that the electrocardiographic manifestatio where the result of a cardiovascular allergic reaction.

---

1. Auer, J., and Lewis, P. A.: The Physiology of the Immediate Reaction of Anaphylaxis in the Guinea-Pig, J. Exper. Med. **12**: 151, 1910.
2. Auer, J., and Robinson, G. C.: An Electrocardiographic Study of the Anaphylactic Rabbit, J. Exper. Med. **18**: 450, 1913.
3. Criep, L. H.: Electrocardiographic Studies of the Effect of Anaphylaxis on the Cardiac Mechanism, Arch. Int. Med. **48**: 1098 (Dec.) 1931.
4. Wilcox, H. B., Jr., and Andrus, E. C.: Anaphylaxis in the Isolated Heart, J. Exper. Med. **67**: 169, 1938.
5. Lilienfeld, A.; Hochstein, E., and Weiss, W.: Acute Myocarditis with Bundle Branch Block Due to Sulfonamide Sensitivity, Circulation **1**: 1060 (April, pt. 2) 1950.
6. Bullrich, R. A.: Cardiovascular Allergy, Bol. Acad. Nac. Med. Buenos Aires **14**: 642, 1939.
7. Richardson, J. L.: Cardiac Arrhythmias, Bull. Fulton Co. Med. Soc. **16**: 10, 1942.
8. Sherman, W. B.: Drug Allergy, Am. J. Med. **3**: 586, 1947.

SUMMARY AND CONCLUSIONS

A case in which electrocardiographic findings sugested myocardial infarction associated with urticaria resumably due to drug hypersensitivity is reported. hese electrocardiographic findings disappeared in 12 ays. Therefore, it is concluded that this condition was ot myocardial infarction but a manifestation of a cardioascular allergic reaction.

1538 Medical-Dental Building (Dr. Foster).

OUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

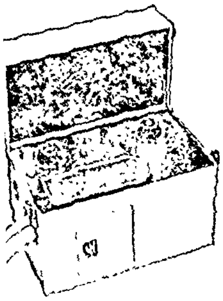
The Council on Physical Medicine and Rehabilitation has uthorized publication of the following reports.

RALPH E. DE FOREST, M.D., *Secretary*.

ECK-LEE CARDI-ALL ELECTROCARDIORAPH ACCEPTED

Manufacturer: Beck-Lee Corporation, 630 West Jackson lvd., Chicago 6, Ill.

The Beck-Lee Cardi-All Electrocardiograph is a direct-writing strument in which an electrically heated stylus traces on a at-sensitive paper strip. Unpacked, the instrument measures by 22 by 39 cm. (12½ by 8½ by 15½ in.) and weighs 12.4 . (27¼ lb.). Packed for domestic shipment, it measures 44 by 39 by 52 cm. (17½ by 15¼ by 20½ in.) and weighs 16 kg. (35 lb.). The foreign shipping weight is 30 kg. (67 lb.). Included in the above shipping weights are the following items: 1 patient cable, 1 power line cord, 1 ground wire, 1 tube of jelly, 1 set of electrodes, 1 set of electrode rubber straps, 1 roll of paper, 1 guarantee card, 1 instruction book, and 1 slip cover.



Beck-Lee Cardi-All Electrocardiograph

The instrument operates only on 60-cycle alternating current at a nominal voltage of 115; it will, however, operate within the range from 105 to 135 volts, and special modifications for other frequencies and voltages are available. It draws 1.2 amp.

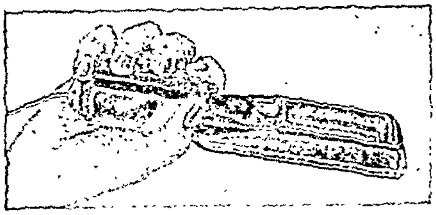
Electrophysical and clinical trials of the instrument in laboratories acceptable to the Council gave evidence of satisfactory onstruction and performance. The Council on Physical Medine and Rehabilitation voted to include the Beck-Lee Cardi-All lectrocardiograph in its list of accepted devices.

INERALIGHT, MODEL SL 3660, ACCEPTED

Manufacturer: Ultra-Violet Products, Inc., 145 Pasadena ve., South Pasadena, Calif.

The Mineralight, Model SL 3660, is a small source of ultraolet radiation useful generally for the examination of small ecimens of material, but especially designed for use in medil diagnosis. It operates on 50 to 60 cycle alternating current 110 volts, and draws 9 watts of power. Unpacked it measures cm. (11¼ in.) in length and weighs about 900 gm. (2 lb.). epared for shipment it measures 36 cm. (14 in.) in length and ighs 1.8 kg. (4 lb.).

The item under consideration, Model SL 3660, is so named cause its burner tubing is made of Corning soda lime glass ternally coated with fluorescent powder) and because it has a Kopp Glass No. 61 filter, so that it delivers its maximum energy in the long ultraviolet region at about 3660 angstroms. It therefore should not cause erythema or dermatitis, and is to be distinguished from another model, SL 2537, which has its maximum output at about 2540 angstroms and is dangerous to the eyes. Both lamps are useful in mineralogy, and a differential effect between them helps to distinguish some minerals from others. The one designed for medical purposes is Model SL 3660. The Council obtained evidence from acceptable sources that this lamp is well constructed, that it gives radiation of wavelength and intensity suitable for use by dermatologists in recognizing hairs infected with Microsporon lanosum and M. audouini, and that it is useful to ophthalmologists for examining the cornea and conjunctiva. The Council on Physical Medicine and Rehabilitation voted to include the Mineralight, Model SL 3660, in its list of accepted devices.



Mineralight, Model SL 3660

KINOCYCLE ACCEPTED

Manufacturer: Kinocycle Company, 99 Prospect Hill Avenue, Summit, N. J.

The Kinocycle is a stationary bicycle, with flywheel and brake, on which the user experiences reciprocating motion of handlebars and seat as well as the usual rotating pedal movements. It offers both active and passive movement, since it can be actuated either by the patient's own efforts or by a motor. When unpacked and assembled for use, without the transformer, the apparatus measures 89 (height) by 130 by 65 cm. (35 by 51 by 25½ in.) and weighs 122 kg. (268 lb.). Packed for shipment it makes three crates as follows:

	Height	Length	Width	Weight
Kinocycle				
Metric	84 cm.	130 cm.	56 cm.	152 kg.
English	33 in.	51 in.	22 in.	334 lb.
Control Unit				
Metric	39 cm.	62 cm.	51 cm.	27 kg.
English	15½ in.	24¼ in.	20¼ in.	59 lb.
Transformer				
Metric	27 cm.	37 cm.	20 cm.	25.4 kg.
English	10½ in.	14½ in.	7¾ in.	56 lb.

The transformer is a 110/220 volt step-up autotransformer, and is used only when 220 volt alternating current is not available. The device requires a 50 to 60 cycle alternating current at 220 volts and draws 800 watts of power.

The Council obtained evidence that this device was well made and worked as represented by the manufacturer, but that there was considerable divergence of opinion among physiatrists as to the benefits to be expected from its use. The consensus was that when used with care and discrimination under the direction of a qualified physiatrist it would provide both exercise and motivation for certain patients. The Council on Physical Medicine and Rehabilitation voted to include the Kinocycle in its list of accepted devices.

Kinocycle

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

WEIGHT CONTROL

The high incidence of obesity in the adult American population is a pressing medical problem; it has been called the most frequent physical abnormality appearing in routine examinations. A survey of existing statistics on body weight, data on normal men and women, secured from many diverse sources, suggests that from 20 to 40 per cent of those examined are 10 to 20 per cent overweight. The prevalence of body weights that are 10 per cent in excess of average weight for sex and height tends increase with age. It is generally accepted that among ese persons the mortality rate is greater than in those in the normal range of body weight and that there is increased prevalence of, and death from, degenerative diseases, with obesity. Attention has frequently been called to life insurance statistics showing that diabetes and obesity are closely tied together, and it is a matter of record that obesity exerts a harmful influence on the course of arthritis and in cardiovascular disease.

In view of the fact that in general diet therapy and medication can control obesity on a long-term basis only with great difficulty, a recent report [1] on an effort to promote weight reduction in obese persons through psychological motivation is of interest. The approach utilized in the Boston experiments was based on the premise that only to a limited extent can obesity be validly related to endocrine dysfunction. The obese person, it was reasoned, consumes more food energy than is required by his body; the urge to eat must then lie in nonnutritional and nonmetabolic, namely, in psychological, causes. The gratification of a need for pleasure often revolves about food; the memory of early hunger frequently is a stimulus for overeating following a change in fortune; elaborate meals and, consequently, overindulgence in food often are a sign of social and financial status; chronic nervous and emotional tension frequently is relieved by habitual eating. Thus the Boston experiments, involving a trial period of 16 weeks, included groups of persons who h been unsuccessful in losing weight by their own effor but who had an earnest desire to reduce. They had t approval of their physicians and assembled periodical with a leader trained to stimulate and guide intellig discussions regarding the problem of mutual interest a the progress in meeting it and to emphasize general n tritional principles. The success of the project is indicat by continued meeting of the groups after the formal tri period has terminated.

Although this group approach to weigh control is st in the exploratory stage, it has interesting possibiliti and may be an important practical factor in the reducti of obesity in the nation.

EXPERIMENTAL PRODUCTION OF CONGE ITAL ANOMALIES WITH CORTISONE

Studies by Fraser and his associates [1] on the inciden of cleft palate in the offspring of cortisone-treated pr nant mice suggest that this drug may be added to the l of agents known to cause intrauterine developmental d turbances when administered to pregnant animals. Fi genetically different groups of pregnant mice at vario stages of gestation were given intramuscular injections cortisone for four days. When treatment with 1.25 mg. 2.5 mg. doses of cortisone was started on the 10th 11th day of gestation, the incidence of cleft palate in t offspring was found to be 79% in two of the stocks (and N) and 21% in the other three (C57, Black and ta and H). For treatment started on the 12th or 13th da the corresponding values were 29% and 8% respe tively, and when treatment was started on the 14th 17th day they were 29% and 3% respectively. An a preciable number of cleft palates were found when trea ment was started after the 12th day of gestation, wh the nasomaxillary fissure is said to have closed. Th authors suggest that in these cases the defect may be d not to a delay in the developmental process but to degenerative change. The congenital defect was n observed in offspring of untreated mice, in offspring mice injected with the cortisone-free vehicle, or in t offspring of mice receiving 0.625 mg. doses of cortison An incidental observation was that of strain differenc in the ability to become pregnant after coitus, the anima of stocks A and N showing a significantly lowered inc dence of pregnancy than animals of stocks C57, Bla and tan, and H.[2]

These findings do not necessarily indicate that ther peutic doses of cortisone during pregnancy offer a hazard to the offspring. As the authors point out, it important to know whether cortisone and the natura produced adrenal corticoids cross the human placen before one can decide how far these findings in mice m apply to human congenital defects. The doses employ are large and, if administered to human beings on a sin lar milligram-kilogram basis, would amount to about 2 8 gm. Nevertheless, the data presented by these inves gators are of interest in view of the limited informati available concerning the etiology of congenital defec

---

[1] Chapman, A. L.: Weight Control—A Simplified Concept, Pub. Health Rep. **66**: 725 (June 8) 1951.

[1] Baxter, H., and Fraser, F. C.: The Production of Congenital Defects in the Offspring of Female Mice Treated with Cortisone: A Preliminary Report, McGill M. J. **19**: 245 (Dec.) 1950. Fraser, F. C.: The Experimental Production of Congenital Anomalies, Canad. M. A. J. **64**: 270 (March) 1951. Fraser, F. C., and Fainstat, T. D.: Production of Congenital Defects in the Offspring of Pregnant Mice Treated with Cortisone: Progress Report, Pediatrics **8**: 527 (Oct.) 1951.

[2] Fainstat, T. D.: Hereditary Differences in Ability to Conceive Following Coitus in Mice, Science **114**: 524 (Nov. 16) 1951.

BLOOD LIPIDS AND ATHEROSCLEROSIS

Clinical and experimental investigation with blood lipids has added significantly to the knowledge of the nature of atherosclerosis. Much of this work has been done in an attempt to determine the role of blood lipids and dietary intake of cholesterol and fat in the production of atherosclerosis. A practical clinical program for the prevention and management of atherosclerosis, however, is not yet available.

The presence of lipids in atheromatous lesions and the observation that patients with atherosclerotic coronary artery disease in general show higher and more variable serum cholesterol levels suggested the possible etiological significance of these substances. While atheromatous lesions may be produced in the rabbit by feeding large amounts of cholesterol, in the dog cholesterol alone will not produce lesions, though cholesterol and thiouracil fed together are effective.[1] Even simultaneous administration is not effective in the rat.[2] The large amounts of cholesterol and thiouracil used in these studies are not physiological and limit the applicability of these results to humans.

Studies by Keys [3] on 482 clinically normal men failed to reveal a significant correlation between dietary cholesterol intake and serum cholesterol levels. Also, Keys reports that reduction of the cholesterol intake by 50% or more for several months failed to change the serum cholesterol levels. Only with an essentially fat-free, cholesterol-free, rice-fruit diet, which provided little sodium and was probably deficient in calories, was he able to produce a significant decrease in serum cholesterol levels. It is doubtful, therefore, that the low cholesterol diets in current use are effective.

Most provocative among recent developments is the suggestion that size and physical state of lipid molecules may be more important in the production of atherosclerosis than the serum level of cholesterol. Hueper [4] reported that repeated injections of polyvinyl alcohol and other macromolecular substances in certain animals resulted in atherosclerotic lesions containing deposits of the injected substance rather than lipids.

Gofman and others [5] approached this problem by ultracentrifugal flotation of serum cholesterol and other serum lipids. They found four groups of molecules in serum classified according to the rate (Sf units) at which they migrate in the flotation procedure. The Sf 10-20 group, according to Gofman, appears to be related to human atherosclerosis. In 230 patients with myocardial infarction, 91% showed Sf 10-10 molecules above the borderline resolution value, compared to 50% in a normal group. These molecules, however, were present in 40% of normal males 20 to 30 years old; only long-term observation will determine their prognostic significance.

Ahrens' [6] studies, on the other hand, indicate that the ratio of cholesterol to phospholipid may be more important in the deposition of lipids. Relatively high concentrations of phospholipids may "solubilize" cholesterol and neutral fat.

Keys,[7] in a review of his and Gofman's data, questions the latter's conclusions. Keys states there is no evidence that the concentration of G (giant molecules of Gofman) is more critical than that of cholesterol in the development of atherosclerosis. He concludes, also, that there is no evidence that G concentration in the blood may serve as an indicator of the probability of present or impending coronary disease. If there is any advantage to one of these measures in predicting or detecting coronary disease, Keys believes the evidence favors determination of total blood cholesterol.

Long-term studies are required to determine the diagnostic and prognostic value of blood lipid values in atherosclerosis. The role of dietary cholesterol and fat in the prophylaxis and management of atherosclerosis also requires further study. Despite the many unsolved problems and puzzling conflicts it presents, the rapidly expanding literature of this subject gives promise of an increasing understanding of the nature of atherosclerosis. There should result a more effective approach to the clinical management of this leading cause of death and disability.

LIFE EXPECTANCY

There has been some uncertainty about the figures for life expectancy at birth in the United States in 1900. It has been customary to use 49.2 years, based upon the deaths in 1900, 1901, and 1902 in the death registration states and the population estimate for July 1, 1901. The National Office of Vital Statistics has recently presented interpolated life expectancy values for each year, from 1900 to 1948, establishing that life expectancy at birth in 1900 was 47.3 and in 1948, 67.2.[1] This eight-page publication, which can be obtained without charge from the National Office of Vital Statistics, Washington 25, D. C., contains a new table, showing that life expectancy at birth in 1900 was 46.3 years for males and 48.3 for females as compared with 64.7 and 70.2 in 1948, gains of 18.4 years and 21.9 years respectively between 1900 and 1948. Later releases by the National Office of Vital Statistics give 67.6 years for 1949. The figures for 1950 have not yet been released. Thus, life expectancy at birth increased 20.3 years between 1900 and 1949, although there were some decreases during the period, particularly the sharp decrease in 1918 due to the influenza epidemic. These newer figures for life expectancy offer an authoritative basis for determining the increase that has been gained in the last half century. They also offer evidence of how much has been gained for the health of the people of this nation.

---

[1] Steiner, A., and Kendall, F. C.: Atherosclerosis and Arteriosclerosis in Dogs Following Ingestion of Cholesterol and Thiouracil, Arch. Path. **42**: 433 (Oct.) 1946.

[2] Horlick, L., and Havel, L.: The Effect of Feeding Propylthiouracil and Cholesterol on the Blood Cholesterol and Arterial Intima in the Rat, J. Lab. & Clin. Med. **33**: 1029, 1948.

[3] Keys, A.; Mickelsen, O.; Miller, E. V. O., and Chapman, C. B.: The Relation in Man Between Cholesterol Levels in the Diet and in the Blood, Science **112**: 79, 1950.

[4] Hueper, W. C.: Organic Lesions Produced by Polyvinyl Alcohol in Rats and Rabbits, Arch. Path. **28**: 510 (Oct.) 1939.

[5] Gofman, J. W., and others: Blood Lipids and Human Atherosclerosis, Circulation **2**: 161, 1950.

[6] Ahrens, E. H., Jr.: The Lipid Disturbance in Biliary Obstruction and Its Relationship to the Genesis of Arteriosclerosis, Bull. New York Acad. Med. **26**: 151, 1950.

[7] Keys, A.: Cholesterol, "Giant Molecules," and Atherosclerosis, J. A. M. A. **147**: 1514 (Dec. 15) 1951.

[1] Greville, T. N. E., and Carlson, G. A.: Estimated Average Length of Life in the Death-Registration States, Vital Statistics—Special Reports, **33**: No. 9, United States Public Health Service, National Office of Vital Statistics, (Feb. 16) 1951.

THE PRESIDENT'S PAGE

A SPECIAL MESSAGE

Establishment of the President's Commission on the Health Needs of the Nation is the latest maneuver in President Truman's campaign to socialize the medical profession. This commission, to be financed from emergency funds allocated for national defense, is a transparent fraud on the American people. Every physician and all others associated with us in caring for the health of the nation should clearly understand its absurdities and its dangerous political significance.

The President's statement announcing formation of the commission to "make a critical study of our total health requirements, both immediate and long-term, and [to] recommend courses of action to meet these needs," was dated Dec. 29, 1951. Immediately, Dr. Gunnar Gundersen and I issued statements to the s voicing strong opposition to the sal and exposing its political pur-

r. Gundersen, of La Crosse, Wis., a member of the Board of Trustees of the American Medical Association, had been named by the President, without Dr. Gundersen's approval, as a member of the commission. He forthrightly disavowed such action, stating "I believe I am correct in assuming that the commission is designed both in its majority membership and in its objectives, as an instrument of practical politics, to relieve President Truman from an embarrassing position as an unsuccessful advocate of compulsory health insurance. I certainly cannot subscribe to such a masquerade, and today have requested that my name be removed from consideration as a commission member."

My own statement pointed out that, as all competent authorities know, "There is no health emergency in this country to require such an investigation or to justify the use of defense emergency funds by such a commission. The health of the American people never has been better . . . and greater progress is being made in providing prepaid medical care for all who need or desire it than at any other time in the nation's history." I suggested, with all earnestness, that "Congress should put a quick end to this misuse of national defense funds." As individual citizens, we should leave Congress no uncertainty as to how we feel about this obvious misuse of defense emergency funds for a program of political propaganda in a critical election year.

I should like to make it clear at this point that, in attacking the commission, we do not attack the individual members who are serving on it. This is a stacked commission, but among its membership are to be foun sincere and able men who have accepted the appoint ment with the finest intentions. However, in such an ob viously political framework and in the short space o time that the commission has been allowed for its work they will be ineffectual.

Both President Truman and Dr. Paul B. Magnuson chairman of the commission, have insisted publicly tha it is an unbiased, impartial group. The degree of impar tiality which may be expected from this commission i indicated by the following statement of its chairman Dr. Magnuson, as reported in the Jan uary 14 issue of *Time* magazine: "If th A.M.A. hierarchy devoted as much tim to care of their patients as they do t political maneuvering, we'd all be bette off." If this type of "impartiality" per vades the atmosphere in which the com mission meets and works during th months ahead, it is clearly apparent tha this new commission will become jus another adjunct of the Truman-Ewin propaganda machine.

One of the clearest proofs that this i simply another flagrant proposal to pla politics with the medical welfare of th American people is its timing. The executive order establishing the President' Commission as of Dec. 29, 1951, states that "The commission shall cease to exist thirty days after rendition of its final report to the President under Section 3 of this order, or one year after the date of this order, whichever shall occur first." The one-year tenure of this commission, as any experienced student of medical affairs will attest, is wholly inadequate for a survey of the broad field projected in the Presidential order. Significantly, the year designated is the election year of 1952, when President Truman and Congressional candidates who have supported his socialized medicine proposals may find it politically expedient to avert a showdown before the people by stating that the whole subject is under study by a Presidential Commission and is therefore not an issue in the election.

This proposed survey, to be completed within a yea or less, is to cover research of monumental proportions if the President's outline of objectives is to be followed research that could not possibly be accomplished wit either accuracy or adequacy within less than three t five years.

Section 2 of the Executive Order lists eight broad sub jects that the commission is "authorized and directed to inquire into and to study. Space does not permit list ing all of them, but consider the following subjects, any one of which would require a year or more of the most intensive work:

Subject (*a*): "The current and prospective supply of physicians, dentists, nurses, hospital administrators, and allied professional workers; the adequacy of this supply in terms of the present demands for service; and the ability of educational institutions and other training facilities to provide such additional trained persons as may be required to meet prospective requirements."

Or, subject (*d*): "The degree to which existing and planned medical facilities, such as hospitals and clinics, meet present and prospective needs for such facilities." Or, subject (*e*): "Current research activities in the field of health and the programs needed to keep pace with new developments." Or, subject (*g*): "The adequacy of private and public programs designed to provide methods of financing medical care." There are four other subjects, ranging from the ability of local public health units to meet civil defense requirements to the "desirable level" of federal, state, and local government expenditures in the health field.

The magnitude of the surveys proposed is evident. When one considers that it took the Medical Task Force of the Hoover Commission, with an ample staff and budget, one and one-half years to complete its study of the single subject of federal medical service, that the Commission on Chronic Illness will spend four to five years on its study in that field, and the Commission on Financing of Hospital Care will take three years, the impossibility of completing this proposed assignment is obvious.

President Truman's reference to compulsory health insurance in his State of the Union message, delivered to Congress on January 9, gave considerable force to reports that he plans to use his new Presidential Commission on Health to secure a temporary "cease fire" agreement on the issue of socialized medicine for the period of this year's election campaigns.

In this regard, the President said: "One of the things this commission is looking into is how to bring the cost of modern medical care within the reach of all our people.

"I have repeatedly recommended national health insurance as the best way to do this. So far as I know, it is still the best way. If there are any better answers, I hope this commission will find them."

JOHN W. CLINE, M.D.

The one subject that might possibly merit the expenditure of national defense emergency funds is subject (*c*): "The problems created by the shift of thousands of workers to defense-production areas requiring the relocation of doctors and other professional personnel and the establishment of additional facilities to meet health needs." In this case, President Truman might be interested to know that the Health Subcommittee of the Senate Committee on Labor and Public Welfare is already conducting such a study. In addition, the American Medical Association's Council on Industrial Health is making a survey of the number of physicians in such defense areas for the purpose of encouraging physicians to settle in any such areas found to be short of medical personnel.

Since the study of the health needs of the nation is a continuing one and is participated in by the medical profession and by other private agencies and groups, much duplication of effort by the President's Commission is inevitable. The Brookings Institution's two to three year study of the availability of medical service in the United States, covering many of the subjects mentioned in the President's directive to the commission, which is still under way and which will be completed this year, a new study on the financing of hospital care being undertaken by the Commission on Financing of Hospital Care, the studies of the Council on Industrial Health, Council on Medical Service, and Committee on Federal Medical Service of the American Medical Association, and the continuing studies of 53 constituent medical societies, 2,000 component county societies, and innumerable other voluntary and local governmental agencies are providing infinitely more information than this new commission will ever be able to develop.

It is unfortunate that the President refuses to admit the great progress that has been made by the medical profession in improving the health of the nation; he appears wholly uninformed concerning the reports that already have been made on medical progress of the past ten years, and most particularly of the past three. The entire fabric of the administration's case for federal control of the medical profession is woven from obsolete material and inaccurate figures. The people are being asked to believe in an emergency that did not exist even a decade ago and certainly does not exist today. That they are not too impressed is evidenced by the fact that, during the three years of Mr. Truman's most ardent advocacy of compulsory health insurance, more than 25 million additional persons enrolled in the many fine voluntary health insurance plans now available in the United States. Best estimates indicate that at this time over 80 million persons in this country have voluntarily obtained insurance as a cushion against the major costs of illness and the American people are determined to resolve this problem without either government help or interference.

It seems almost incredible that, in the face of all these facts, emergency defense funds should be allocated to a gigantic health survey that cannot possibly achieve its aims in the time allotted, is not necessary, and is so palpably political in its design.

JOHN W. CLINE, M.D., San Francisco.

ORGANIZATION SECTION

THE FOURTH PUBLIC RELATIONS CONFERENCE

Some working solutions to the biggest medical public relations problems facing the medical profession today were brought to light last month at the American Medical Association's Fourth Annual Medical Public Relations Conference, which was attended by over 500 public relations-minded physicians, including A. M. A. officers, trustees, and members of the House of Delegates, and lay public relations personnel. The conference, which was held Dec. 2-3, preceded the A. M. A. Clinical Session in Los Angeles.

Labelled as top public relations problems were the socialistic trend encroaching on the American system of life and the cost of medical care. Three significant surveys of public opinion in regard to medical care were reported on. Each study more clearly defined the public relations needs of the medical profession. The keynote speaker at the Sunday luncheon was Dr. Louis H. Bauer, A. M. A. President-Elect, who warned that America is fast moving down the road marked "socialism." Reechoing the conference theme, which was "joining forces for better public relations," Dr. Bauer urged physicians to band together to "restore what has been destroyed of our individual liberty." Dr. John W. Cline, A. M. A. President, toastmaster, introduced Dr. Bauer.

The first conference work session, titled "What the People Think," was devoted to reports of recent surveys of opinion on medical care. Chairman of the Sunday afternoon meeting was Dr. Gunnar Gundersen, chairman of the Executive Committee of the A. M. A. Board of Trustees. Dr. Gundersen introduced speakers: a psychologist, a sociologist, and a public relations [illegible]ltant.

[illegible] New York psychological consultant, Ernest Dichter, Ph.D., [illegible]sented the results of a California study of doctor-patient relationships that he undertook for the purpose of discovering where public relations emphasis should be concentrated. To arrive at psychologically correct public relations, he said, the emotional and sometimes unconscious attitudes of physician and patient must be recognized.

"Much of the critical attitude of the public is due to a deep, underlying resentment and conviction that the modern doctor is out of tune with the times," Dichter stated. "A real improvement in doctor-patient relationship can only take place if both the physician and the patient realize that they are part of a continuously changing pattern of life.

A report of a Toledo, Ohio, survey conducted by the Health Information Foundation, the Toledo and Lucas County Academy of Medicine, and Wayne University of Detroit, was given by Wayne sociologist Edgar A. Schuler, Ph.D. Dr. Schuler said excessive fees, shortage of hospital beds, and shortage of medical personnel were listed by respondents as three major problems. Community leaders questioned about medical care, said Schuler, condemned the small minority of physicians for charging excessive fees and for unnecessary surgery. Even though opposed to compulsory health insurance, these persons felt something should be done to reduce the cost of medical care.

An urban-rural opinion study was reported on by Lawrence W. Rember, director of field service for the A. M. A. Department of Public Relations. The Decatur, Ill., study was conducted this fall by Rember on a demonstration basis to help the local medical society determine its public relations program. Rember pointed out that only a small minority, running from 6 per cent to 29 per cent, complained about physicians and medical care.

Complaints included occasional inability to obtain the services of a physician, the high cost of surgery and drugs, inadequate hospitals, discourteous office help, long waits in physicians' offices, and indifference or aloofness of physicians. Rember concluded by saying that the job is partly one of public education and partly one of correction within the profession.

Monday morning sessions considered "Public Relations Problem Number One: The Cost of Sickness." Dr. Joseph D. McCarthy, member of the A. M. A. Council on Medical Servi served as chairman. Participating in the first panel on the c factor in everyday practice were Dr. Harlan A. English, D ville, Ill., who spoke on "Fees Should Be No Mystery"; Cyrus W. Anderson, Denver, who discussed "Explaining Th 'Other' Medical Expenses"; and Dr. E. E. Wadsworth, Alh bra, Calif., who read a paper by Dr. Stanley R. Truman, V tura, Calif., on "Time Is Money for Your Patients, Too."

The second panel was entitled "Medical Society Soluti to the Cost Problem." Speakers included Stanley R. Ma executive secretary, Columbus, Ohio, Academy of Medici Dr. Earl W. Mericle, Indianapolis, and Joseph F. Donovan, Jose, Calif., executive secretary, Santa Clara County Med Society. Talks were given on "The Public Relations Facto Collecting Bills," "Your Patient and His Big Bills," and " 'Regardless of Ability to Pay' Idea." Out of these panel cussions came many suggestions for solving the public relati problems involved in the cost of sickness. Physicians, confe agreed, should promote more widespread use of volunt health and catastrophic insurance plans, discuss fees in adva with patients, discipline those few physicians who consiste overcharge, help patients budget for long-term medical care, train office personnel to be good public relations representati and use public relations techniques when collecting bills.

Dr. Lewis A. Alesen, Los Angeles, president-elect of the C fornia Medical Association, warned at the Monday lunch that there is danger in the philosophy that "capitalism is a temporary way station on the road to socialism." Ale featured noon speaker, vigorously pointed out the responsibi of American physicians to reverse the trend toward sociali

Wind-up conference sessions were devoted to two panels the subjects of joining forces with other groups and plann effective public relations programs for 1952. Chairman Harvey Sethman, executive secretary, Colorado State Med Society.

Dr. Ernest B. Howard, Chicago, Assistant Secretary of A. M. A., discussed national interprofessional relations, and Willis H. Huron, Iron Mountain, Mich., spoke on statew organizations and the medical society. Dr. George Schwa New York, spoke on the physician's role in community aff Schwartz pointed out that if physicians do not realize their c munity responsibilities and take an active part in local aff so that the community comes to rely upon their advice in m cally related matters, they cannot expect the community to t their word on such subjects as compulsory health insuranc

Presenting the public relations program for the A. M. A 1952 on the national level, Leo E. Brown, Chicago, A. M. public relations director, told of the many activities now un way that will aid state and county medical societies in carry out their own programs.

Public relations goals for state societies were outlined by Joseph E. Mott, Paterson, N. J., and Fred G. Mitten, Phoe Ariz., told what the county society can do for public relati Final speaker was Dr. Charles R. Henry, Little Rock, A who discussed the role of the individual physician in the l public relations program of the medical profession. Dr. H urged physicians to recapture some of the warmth and symp of the "Old Doc" of the former days and to "come out of t offices into the community." According to Dr. Henry, " individual physician can play a most worthwhile role in c ing a reasonable and favorable public relations atmosp through self-appraisal, self-improvement and cooperation, in his local community and the larger community of his fe practitioners. He must pattern his approach to patients, to community and to his profession on a practical compro someplace between the stylized portraits of 'Old Doc' and currently popular medical model, the 'man in white.'"

A digest of conference proceedings will be available somet after the first of the year and will be distributed to those attended the conference. Others wishing copies may write A. M. A. Public Relations Department.

MEDICAL NEWS

ALABAMA

Study of Maternal Deaths in Alabama.—Throughout 1952 the State Department of Public Health and the Medical Association of the State of Alabama will sponsor and conduct a case study of each maternal death in Alabama. In seven areas 26 obstetricians will make personal case studies of maternal deaths. Case study forms so completed will then be referred to a central committee for review and evaluation. This committee will be composed of six recognized obstetricians. All marks of case identification will be removed from case records before they are referred to the central committee. Dr. Thomas M. Boulware, Birmingham, is chairman of the state committee.

CALIFORNIA

Portrait of Dr. Abbott.—A portrait of Dr. LeRoy C. Abbott, chairman of the division of orthopedic surgery in the University of California School of Medicine, San Francisco, has been presented to the school by his friends and associates. The portrait was painted last year on the occasion of Dr. Abbott's 60th birthday. It has been hung in Toland Hall. Dr. Abbott was the first professor of orthopedic surgery in the school of medicine. He was appointed to the University of California staff in 1930.

First Unit of Medical Center Completed.—The first unit of the new $21,080,000 University of California Medical Center in San Francisco, a small four-story unit, has been completed, and the radioactivity center is the first laboratory to be installed in the new building. Directed by Kenneth G. Scott, Ph.D., assistant professor of experimental radiology, it will serve the needs of the whole medical center for radioisotopes in research, diagnosis, and treatment. Supervision is exercised by a committee composed of Dean Troy C. Daniels, Ph.D., School of Pharmacy; Dean Willard C. Fleming, College of Dentistry; and Dean Francis S. Smyth, School of Medicine. The radioactivity center now offers the individual investigator the space, some $60,000 in specialized equipment, and the advice and aid of a staff experienced in the use of isotopes.

Dr. Raymond Allen Appointed Chancellor of University.—Dr. Raymond B. Allen, who retired December 31 as president of the University of Washington, Seattle, has been named chancellor of the University of California at Los Angeles to succeed the late Dr. Clarence A. Dykstra, who died two years ago. Dr. Allen, appointed in November by President Truman as head of the United States Psychological Strategy Board, will fill the federal position until he takes up his duties in Los Angeles next summer. The title of chancellor, replacing the title of provost, was created by the regents of the university this year in an administrative reorganization designed to give heads of both the Los Angeles and Berkeley campuses near-autonomy in their operations. However, they will report to the president of the university, rather than directly to the regents. Dr. Allen went to the University of Washington after having been dean of the medical schools at Wayne University in Detroit and the University of Illinois in Chicago.

COLORADO

Dr. Kern to Head New Medical Clinic.—Dr. Fred Kern Jr. of New York has been appointed director of the General Medical Clinic at Denver General Hospital. He will serve as assistant professor of preventive medicine and public health on a full time basis in his capacity as director, which is the first step of an experiment designed to demonstrate the practice of good general medicine. This program is being financed by a grant of $264,912 from the Commonwealth Fund to the University of Colorado School of Medicine. The base of operations will be Denver General Hospital, where a family medical service along with nursing and social work will function as needed in the patients' homes, in the clinic, and in the wards. It will be staffed by graduate students of medicine preparing for general practice, assisted by juniors from the medical school, under the supervision of a balanced group of teachers. The heart of the plan is a general medical clinic that will replace the outpatient department and will gradually replace the home care that now can be given only superficially. Dr. Kern has been assistant in medicine at Cornell University Medical College and is now instructor in medicine and in public health and preventive medicine there.

CONNECTICUT

Society News.—The East Hartford Medical Society has been recently organized with Dr. John N. Gallivan as president, Dr. Louis C. Acqua as secretary, and Dr. Harvey H. Sirota as treasurer.

Postgraduate Lectures at Stamford.—The Stamford Academy of General Practice is presenting a series of lectures during the first three months of the year on endocrinology and diseases of metabolism at Stamford Hospital Auditorium on Tuesday evenings at 8:30 p. m. The lectures are to be given by the following members of the faculty of Yale University School of Medicine, New Haven:

January 22, Pituitary Adrenal Axis, Dr. Cyril N. H. Long.
January 29, Diabetes Mellitus, John P. Peters.
February 5, Diabetes Mellitus, John P. Peters.
February 19, Thyroid Physiology, David M. Kydd.
February 26, Thyroid Physiology, David M. Kydd.
March 4, Liver Function in Health and Disease, Gerald Klatskin.
March 18, Liver Function in Health and Disease, Gerald Klatskin.
April, Lower Nephron Nephrosis, Louis G. Welt.
April, Edema, John P. Peters.

Dates of April lectures will be announced. The registration fee of $25 is payable to the Stamford Academy of General Practice, Dr. Arthur Koffler, Secretary, 218 Bedford St., Stamford. Interns and residents are invited to attend free of charge.

ILLINOIS

Gift for Hearing Conservation.—The Swanberg Kiwanis Foundation of the Kiwanis Club of Quincy has received another gift of $1,000 from Dr. Harold Swanberg. The foundation's principal activity has been to aid the Quincy and Adams County Hearing Conservation Program for School Children, which it began sponsoring in 1949.

Chicago

Meeting of Society of Physical Medicine.—The regular monthly meeting of the Chicago Society of Physical Medicine and Rehabilitation will be held at 8 p. m. January 23 at the University of Illinois, 1819 W. Polk St. "Peripheral Nerve Injuries" is the topic to be presented by Dr. Max K. Newman of Detroit. Preceding the scientific program, dinner will be served at the Medical Center, Y. M. C. A., 1804 W. Congress Street. Reservations should be made early with the secretary of the society, Dr. Milton G. Schmitt, 6970 N. Clark St., Chicago 26.

Lecture on Diabetes.—Dr. Lester Palmer, Seattle, past president of the American Diabetes Association, will speak on "Diabetic Children in the Modern World" at a meeting of the service unit of the Chicago Diabetes Association January 20 in Thorne Hall, Lake Shore Drive and Superior St. The meeting is open to the public.

Lectures on Cancer.—The second series of lectures on cancer will be presented by the Chicago Medical School in Amphitheatre A Wednesdays at 12:30 p. m. as follows:

January 23, Mechanism of Carcinogenesis, Alexander C. Ritchie, Chicago.
January 30, Effect of Diet in Cancer, Albert Tannenbaum, Chicago.
February 13, Environmental Cancer Hazards, Wilhelm C. Hueper, Bethesda, Md.
February 20, Bone Tumors: Human and Experimental, H. A. Sissons, London, England.
February 27, Chemotherapy of Cancer, Chester [illegible]k,

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

IOWA

Public Health Director Honored.—Dr. Harry E. Ransom, Des Moines, was cited at a meeting of the Polk County Medical Society in November for his 30 years' service in the health department as assistant health officer and commissioner of health. A testimonial plaque in recognition of his services is being prepared for presentation to Dr. Ransom and will be placed permanently in the city hall.

LOUISIANA

Rudolph Matas Lecture.—The fifth annual Rudolph Matas Lecture will be held at 8 p. m. February 15 at Dixon Hall on the Tulane University campus, New Orleans. Dr. Joe V. Meigs, clinical professor of gynecology at Harvard Medical School and chief of the gynecological service of the Massachusetts General Hospital, Boston, will speak on "Treatment of Cancer of the Cervix." The lecture is sponsored each year by the Tulane chapter of Nu Sigma Nu medical fraternity in honor of Dr. Rudolph Matas, emeritus professor of surgery at Tulane. Dr. Meigs' address will be open to the public. Previous Matas lecturers include Dr. Alfred Blalock, Baltimore; Dr. William C. Menninger, Topeka, Kan.; Dr. Cecil J. Watson, University of Minnesota physician, and Dr. Frank Lahey, Boston.

MASSACHUSETTS

Hospital Evening Lectures.—The House Officers' Association of Boston City Hospital announces the following programs in its evening lecture series for February:

February 5, Surgical Diseases of the Pancreas, Richard B. Cattell, Boston.
February 12, Surgical Therapy of Inflammatory Disease of Ileum and Large Bowel, John H. Garlock, New York.
February 19, Intracellular Parasitism in Brucellosis, Wesley W. Spink, Minneapolis.
February 21, Medical Genetics, Laurence H. Snyder, Sc.D., Oklahoma City.
February 26, The Heart and the Thyroid with Particular Reference to Radio-Active Iodine Therapy, Herrman L. Blumgart, Boston.

These programs are held at 7 p. m. in the New Cheever Amphitheatre of the Dowling Building of Boston City Hospital.

MICHIGAN

Symposium on Blood Disorders.—The first annual symposium on disorders of the blood will be held at the Wayne University College of Medicine, Detroit, January 19. Guest of honor will be Dr. Paul A. Owren, professor of medicine at the University of Oslo, Norway. More than 20 papers dealing with blood research will be presented, including two by Fulbright exchange students, Dr. P. de Nicola, University of Pavia, Italy, and Miss Norma Alkjaersig, Biological Institute of the Carlsberg Foundation, Copenhagen, Denmark. Other participants are from Detroit hospitals, Wayne University, University of Michigan, Ann Arbor, and Parke, Davis and Company. Chairman of the conference will be Walter H. Seegers, Ph.D., professor of physiology at Wayne.

NEW YORK

Postgraduate Lectures.—Dr. Joseph Gordon of the Ray Brook State Tuberculosis Hospital will speak on "Bronchiectasis" before the Geneva Academy of Medicine in Geneva at 8:30 p. m. January 21. On February 21 Dr. Stewart Wolf, New York, will address the Utica Academy of Medicine at the Hotel Utica at 8 p. m. on "Visceral Pain Mechanisms." This instruction is provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

Higher Salary Schedule for Public Health Physicians.—A higher salary schedule is being featured in the New York State Department of Health drive to enlist physicians to fill departmental positions. Vacancies exist for consultants in the fields of tuberculosis control, venereal disease control, pediatrics, rheumatic fever, obstetrics, and medical rehabilitation with salaries starting at $8,600 and going to $9,600 after three years' service. For physicians with a minimum of preparation in these fields or in public health, there are a variety of openings at $7,000 to $7,800. Vacancies also exist for local health officers at this salary range and at $9,000. Qualifications for all jobs have been reviewed a lower minimum requirements set up wherever possible to attra young men to the work. Physicians with a few years of practi as well as those who have completed internship or residen may be granted liberal stipends and tuition for academic a field training in public health. In addition to added pay ince tives, other benefits are derived from this type of service. Oppo tunity for independent research, association with leading men public health, permanent civil service status with opportunit for merit advancement to positions paying $10,000 and mo liberal sick leave, four weeks of vacation per year, and N York State's retirement plan, which permits retirement at a 55, are features of service with the department. Under a l passed by the 1951 legislature, noncitizen physicians may hired to fill certain vacancies. Interested physicians are urg to write for descriptive literature to the New York State Depa ment of Health, Albany.

New York City

Psychiatrists Wanted.—The Municipal Civil Service Comm sion of the City of New York is issuing and receiving appli tions for psychiatrist, grade 4, through January 23. There 26 vacancies in the department of hospitals at salaries of $6, per year including a cost of living adjustment of $250 per ye Information may be obtained from the office at 299 Broadw New York 7.

Periodic Visiting Psychiatrists.—Dr. Harry C. Solomon, p fessor of psychiatry at Harvard Medical School and director Boston Psychopathic Hospital, has been appointed as visit psychiatrist to Mount Sinai Hospital, New York, to serve one week starting with a lecture on the evening of January This periodic appointment was instituted by Mount Sinai's p chiatry service as a way of bringing into the hospital va points of view in psychiatry. The first visiting psychiatrist Dr. Roy R. Grinker, director of the Institute for Psychosoma and Psychiatric Research and Training of the Michael Re Hospital in Chicago.

Cerebral Palsy Institute.—The Coordinating Council for Ce bral Palsy in New York City, Inc., will again sponsor a Cereb Palsy Institute, to be given January 21-February 1. Tuition be $25. Qualified physicians as well as physical, occupatio and speech therapists, nurses, social service rehabilitation guidance workers, teachers, and psychologists are eligible attend. The institute will include seminars, field trips, clini demonstrations, and lectures. This year emphasis will be pla on the medical and sociopsychological aspects of mental ficiencies in persons with cerebral palsy, and on recent con butions of psychometrics to this field. Following the institu and starting February 4, the council in cooperation with College of Physicians and Surgeons, Columbia University, offer a three month cerebral palsy course for qualified physici and occupational and physical therapists. Tuition is $250 may include the institute if desired. A limited number of schol ships are available. Information and application blanks can obtained from Miss Marguerite Abbott, Executive Direc The Coordinating Council for Cerebral Palsy in New Y City, Inc., 270 Park Avenue, New York 17.

NORTH DAKOTA

University News.—Dr. William E. Cornatzer, formerly sistant professor of biochemistry at the Bowman Gray Sch of Medicine of Wake Forrest College, Winston-Salem, N. has accepted a position as professor and head of the departm of biochemistry at the University of North Dakota Schoo Medicine, Grand Forks.——The North Dakota Cancer Soc has made a grant of $27,400 to establish a radioactive isot laboratory at the medical school for the treatment of ca and to study the metabolism of experimental cancer with isoto

OHIO

Lecture on Psychiatry.—Dr. Moses R. Kaufman, chief, dep ment of psychiatry, Mount Sinai Hospital in New York, a conference January 16, and he spoke before the Mount S Hospital of Cleveland Medical Society January 17 on "Inte tion of Psychiatry in a General Hospital Setting."

NNSYLVANIA

rsonals.—Dr. Herman Frederick Boerner Jr. has been ap- inted to the staff of The Woods Schools, Langhorne.—— r. William K. Clark, Pittsburgh, has been appointed chief of e cancer division of the state department of health, succeeding r. Leverett D. Bristol, who has resigned.

rst Public Health Unit Under New Law.—Butler County has en selected for the establishment of the first county public alth unit under the state's new public health law. The coop- ation of the county commissioners and the support of 55 citi- n organizations in the county, as well as its proximity to Pitts- rgh, were determining factors in selecting Butler County. The it may become a training field for students at the Graduate hool of Public Health of the University of Pittsburgh. Dr. larence D. Barrett, who has been a public health administrator several counties in Ohio and Michigan, will direct the unit. ntil formation of the county health department and the ap- intment of the county health board, the unit will be state anced and directed. Butler County has a population of about ,000 and an area of 790 miles.

iladelphia

agnostic Service in Cerebral Palsy.—St. Christopher's Hospital r Children, in cooperation with United Cerebral Palsy Asso- ations and the department of pediatrics of Temple University hool of Medicine, announces the establishment of a Diag- stic Service for Neuropathologic Studies of Cerebral Palsy. e facilities of any single institution for investigation of neuro- thologic problems are limited by the small number of autopsies rformed on children with neurologic disorders, and by the accessibility of facilities for histologic examination of the ntral nervous system. This new service, under the direction Dr. James B. Arey and Dr. Waldo E. Nelson, with Dr. rnest A. Spiegel as consulting neuropathologist, has been rmed in an effort to make these facilities available to more ysicians and hospitals. The service will correlate the clinical urse and pathologic findings in children in whom (1) a disease the central nervous system is suspected or (2) the diagnosis cerebral palsy has been established. The institution submit- g a clinical history and a brain from such a patient will receive detailed report, together with a pertinent bibliography and presentative histologic sections, within six months after the ecimen is received. Transportation costs and containers will furnished on application to Dr. James B. Arey, St. Chris- pher's Hospital for Children, 2600 North Lawrence St., hiladelphia 33.

EXAS

ledical Library in Houston.—The Houston Academy of Medi- ine announced its plans January 7 to proceed with the build- g of its Medical Library in the Texas Medical Center. Gifts oward the building, including $300,000 from the M. D. Ander- on Foundation, and funds in hand have assured the academy f sufficient capital to proceed. The membership will be asked o raise an additional $150,000 to complete the fund for the ew building, which will cost not more than $1,250,000. In addi- ion to the space assigned for a future library of 140,000 olumes, the new building will house the administrative offices f the Texas Medical Center, Inc. Other features of the plan re an auditorium seating 500 persons, meeting rooms, study ubicles, offices of the academy, and possibly a clubroom for nembers. The building will be located on the three-acre tract ecently deeded to the academy by the Texas Medical Center nd opposite the main entrance of the new Hermann Hospital.

IRGINIA

rant for Services to Crippled Children.—The Nemours Foun- lation of Wilmington, Del., has allotted $9,800 to the University f Virginia Hospital, Charlottesville, for hospital and convales- ent care of crippled children during 1952. An additional $1,500 as been allocated to the University of Virginia Speech and learing Clinic. These gifts represent a phase of the program of he Nemours Foundation, which has allocated $39,000 for de- elopment of services to crippled children in Virginia for the urrent year.

GENERAL

Grants-in-Aid of Ophthalmic Research.—The National Council to Combat Blindness, in accordance with its program of supporting ophthalmological research, will welcome applications for its third annual grant-in-aid awards to be made in June, 1952. Applications to be considered should be in the office of the council no later than April 15. Application forms may be obtained by addressing: Secretary, National Council to Combat Blindness, 1186 Broadway, New York 1.

Helen Putnam Fellowship.—Radcliffe College is offering again for the academic year 1952-1953 the Helen Putnam Fellowship for advanced research, a postdoctoral resident fellowship for women in the fields of genetics or of mental health, including such fields as clinical psychology and child development. The award carries a grant of $3,000 a year with the possibility of renewal. Applications should be returned to the Secretary of the Graduate School, Radcliffe College, Cambridge, Mass., not later than April 1, 1952. Preference will be given to those whose research is already in progress.

Society Elections.—The following officers of the American Pharmaceutical Association were among those elected recently by a mail ballot and will be installed at the annual convention in Philadelphia the week of August 17: R. Q. Richards, Fort Myers, Fla., president-elect; Tom D. Rowe, Ann Arbor, Mich., first vice-president-elect, and Charles F. Lanwermeyer, Ph.B., Waukegan, Ill., second vice-president-elect. The following officers of the association will continue to function until the Philadelphia convention: Don E. Francke, M.S., Ann Arbor, Mich., president; Joseph B. Burt, Ph.D., Lincoln, Neb., first vice-president, and John A. MacCartney, Detroit, second vice-president. The secretary, now Robert P. Fischelis, Sc.D., Washington, D. C., and the treasurer, Hugo H. Schaefer, Ph.D., Brooklyn, are elected by the house of delegates for three year terms.

Two Large Cities Approve Fluoridation.—The Philadelphia City Council has approved a plan for fluoridation of the city's water supplies and appropriated $150,000 for this project. With its 2,000,000 population, Philadelphia is the nation's third largest city and the largest to date to adopt fluoridation. Active in promoting adoption of the public health measure were Dr. Rufus S. Reeves, city director of public health, and a committee headed by LeRoy M. Ennis, D.D.S., president of the American Dental Association, and Charles H. Patton, D.D.S., president of the Pennsylvania State Dental Association in 1950.

A recent referendum in San Francisco resulted in a decision to fluoridate that city's water supply. The California State Dental Association and the San Francisco Dental Society promoted the project with a Citizens' Committee for the Protection of San Francisco's Good Water.

Arthritis Foundation Seeks Support.—The Arthritis and Rheumatism Foundation, 23 West 45th St., New York 19, is appealing for public support of its program of treatment, education, and research on arthritis and rheumatism. It estimates that 7½ million men, women, and children suffer from some form of arthritis or rheumatic disease, resulting in an annual labor loss of an estimated 97,200,000 work days, and an annual expenditure in public relief of the disabled of $128,000,000. The foundation was established under the sponsorship of the American Rheumatism Association and incorporated as a nonprofit organization under the laws of the State of New York in April, 1948. It operates through a network of chapters established in cities, states, and regional areas. A medical and scientific committee of about 20 doctors and research scientists plans the medical policies of the foundation, sets the standards of medical research work, and employs the personnel. Members of the board of directors, which manages the business affairs of the foundation, are recommended by the American Rheumatism Association and serve as volunteers.

Services for Crippled Children.—Services and facilities offered crippled children through the nation's Easter Seal societies reached an all-time high in 1951, according to the executive director of the National Society for Crippled Children and Adults, Chicago. The year marked the 30th anniversary of the society. The 511 specific services and facilities either in operation or in process of development during 1951 are the following: 114 outpatient treatment-training centers for crippled children and children with cerebral palsy; 58 evaluation and diagnostic clinics; 40 additional facilities receiving either funds or services of a therapist; 25 speech centers; 25 centers of various kinds now being planned; 10 residential facilities such as convalescent homes; 81 camps for crippled children in 33 states; and 158 public school systems that get assistance in special education for crippled children. In addition, 200 parents' groups have been organized by the national society and its affiliates. In 1951 the total number of professional persons trained for specialized work with crippled persons under scholarships, fellowships, grants, and workshops of the Easter Seal societies reached 700.

Walter Reed Society Organized.—Dr. Max Sadove, head of the department of anesthesiology at the University of Illinois, Chicago, was elected organizing president of the Walter Reed Society at the first official meeting of the group held in Los Angeles at the close of the American Medical Association meeting. The society, which is sponsored by the National Society for Medical Research, is comprised of those who have served as "human guinea pigs" in medical research or experimentation under the direction of a qualified scientist. Other officers elected at the meeting were Dr. Clinton H. Thienes, head of the department of pharmacology and toxicology, University of Southern California School of Medicine, Los Angeles, vice-president; Dr. Lloyd D. Seager, head of the department of physiology and pharmacology, University of Arkansas, (Fayetteville), vice-president; Dr. John P. McGovern, chief of the outpatient department of Children's Hospital, Washington, D. C., vice-president; Miss Betty Jenney, research associate, University of Illinois, secretary-treasurer.

tion Meeting of Surgeons.—A section meeting of the Ameri- College of Surgeons will be held at the Hotel Adolphus in llas, Texas, February 4-6. Out-of-state speakers include:

Hilger P. Jenkins, Chicago, Polyps of the Large Intestine.
James H. Forsee, Denver, Surgical Treatment of Pulmonary Tuberculosis.
Robert Woodruff, Denver, Critical Points in Gastric Resection.
Robert S. Dinsmore, Cleveland, Prevention of Cardiac Arrest.
J. Dewey Bisgard, Omaha, Surgery of the Aged.
James T. Priestley, Rochester, Minn., Surgical Lesions of the Pancreas.

Symposiums and panel discussions will be presented as follows:

Breast Tumors, Frederick H. Krock, Fort Smith, Ark., moderator.
Symposium on Trauma, Isaac W. Kaplan and Eugene B. Vickery, New Orleans, and Carl A. Moyer, St. Louis.
Symposium on Cancer, George V. Brindley, Temple, Texas, E. Lawrence Keyes, St. Louis, Arthur Grollman, Dallas, and Henry G. Schwartz, St. Louis.
Hysterectomy: Total, Subtotal, or Vaginal, Curtis H. Tyrone, New Orleans, moderator.
Bleeding from the Gastrointestinal Tract, Ambrose H. Storck, New Orleans, moderator.

Dr. Paul R. Hawley, Chicago, director of the American College of Surgeons, will speak at the dinner Monday evening.

Communicable Diseases in 1951.—The total volume of cases of communicable diseases for the year 1951 reported weekly by states to the Public Health Service increased over that reported in 1950. Most of the increase was due to a higher incidence of measles in 1951. Such diseases as diphtheria, smallpox, and typhoid fever again showed moderate to substantial decreases in incidence. The number of cases of diphtheria reported for 52 weeks in 1951 was 4,152, which is about 30% below that for 1950. A large proportion of the cases were reported from states in the southeastern part of the country. The incidence of smallpox, a disease that is approaching the vanishing point in the United States, was 60% below the 1950 figure. Typhoid fever declined about 10% in number of cases reported. Whooping cough cases also declined about 40%. The cumulative total of poliomyelitis cases was 28,665 in 1951 as compared with the provisional total of 33,350 in 1950. Fewer cases of influenza, pneumonia, Rocky Mountain spotted fever, and tularemia were reported. The lower incidence of Rocky Mountain spotted fever for the country as a whole in the past few years is principally due to a lower incidence in the Mountain and Pacific states. No decline has been reported in the southeastern section of the country in recent years.

A higher incidence of anthrax, infectious encephalitis, malaria, measles, meningococcal meningitis, scarlet fever, and streptococcal sore throat was reported in 1951. Coincident with an increase of anthrax cases in man was a relatively high incidence in animals in certain sections of the country where the disease had not been observed for a number of years. For the second year in succession, meningococcal meningitis showed a sligh increase in incidence. The increase in malaria during 1951 wa due to infected military personnel who returned from Korea About one-fourth of the more than 6,000 cases reported wer classified as civilian, but most of them had been detached from military service or were treated by civilian physicians when o furlough. Follow-up studies of reported cases in many state indicated no evidence of an increase in indigenous malaria i the United States.

During 1951 about 200 reports of epidemics or unusual occurrence of diseases, principally infectious diseases, were reported. About three-fourths of those received indicated that foo was suspected of being the vehicle of infection. Only three outbreaks were reported in which water was definitely considere the means of transmission. A relatively large number of outbreaks of infectious hepatitis were reported in which fault sanitation was suspected of playing a part. During the early pa of 1951 outbreaks of respiratory disease were reported whic were shown to be due to A-prime influenza virus. The occurrenc of epidemic influenza in Europe, then its appearance in Canad and the United States were recorded. Nowhere in the Unit States was a high mortality of the disease reported. The princ pal effect, insofar as mortality was concerned, was in old person Reports such as the above were received from 30 different stat and 3 territories. The spread of rabies in the northwestern pa of the country among wild as well as domestic animals w reported. In several of these states rabies in animals appeared f the first time in more than a decade.

CANADA

Conference on Silicosis.—This conference will be held Januar 28-30 at the Noranda Recreation Centre in Noranda, Quebe by the McIntyre Research Foundation in collaboration with th Western Quebec Mines Accident Prevention Associatio Scientific papers to be given are as follows:

J. Avila Vidal, Montreal, Quebec, Examination Procedures for Silicos as Practiced by the Workmen's Compensation Commission of Quebe
Richard S. M. Fisher, Bourlamaque, Quebec, Examination Practice a Experiences Regarding Compensation and Certification.
Mr. Phillippe Monette, K.C., Quebec, Legal Aspects of Compensation i Quebec in Regard to Pneumoconiosis.
Mr. Maurice Lachance, Quebec, Mine Ventilation and Dust Control Quebec Mines.
Anthony J. Lanza, New York, Asbestosis.
Paul G. Bovard, Tarentum, Pa., Pitfalls in X-Ray Technique and Inte pretation.
Fernand Gregoire, Montreal, Quebec, Pulmonary Function Studies.
Jethro Gough, Cardiff, Wales, Patterns in Pneumoconiosis.
Reginald H. Smart, Los Angeles, and Walter M. Anderson, Lomp Calif., Diatomaceous Earth Pneumoconiosis.

Pullman reservations and rail transportation from Toronto wi be available from the Royal York Hotel. The Northland tra leaves Toronto for Noranda at 6 p. m. Eastern Standard Tim January 27.

CORRECTION

Nation's Health in 1951.—The death rate for the United Stat during 1951 was about 9.7 per 1,000 rather than 917 per 1,0 as was stated in THE JOURNAL January 12, page 127.

Veterans Medical Advisory Group.—With reference to the it in Miscellany on advertising page 14 in THE JOURNAL, Dec. 1951, Dr. Derrick T. Vail, chairman, department of ophthalm ogy, Northwestern University, Chicago, will become chairm of the Special Medical Advisory Group of the Veterans Adm istration in January, 1952, succeeding Dr. Charles W. Ma Rochester, Minn., who has been chairman of the group sinc was organized six years ago. The advisory group has adop a policy of rotation. Four new members are elected each y for a five year term. Dr. Mayo will continue as a member the group. Other new officers of the group are Dr. Franklin Murphy, chancellor of the University of Kansas, vice-chairm and Dr. Brian B. Blades, professor of surgery at George Wa ington University, secretary.

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Forensic Sciences, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, Secretary.

American College of Radiology, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Laryngological, Rhinological and Otological Society:

Middle Section, Indianapolis Athletic Club, Indianapolis, Jan. 28. Dr. Ralph J. McQuiston, 20 North Meridian St., Indianapolis 4, Chairman.

Western Section, Los Angeles County Medical Association Building, Los Angeles, Jan. 19-20. Dr. Howard P. House, 1136 West 6th St., Los Angeles 14, Chairman.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Atlantic Coast Line Railway Surgeons Association, Fort Sumpter Hotel, Charleston, S. C., Jan. 24-25. Dr. Braswell E. Collins, Waycross, Ga., Secretary

Central Surgical Association, Toronto, Can., March 6-8. Dr. James T. Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St., Chicago 1, Secretary.

International Medical Assembly of Southwest Texas, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 2445, San Antonio 6, Secretary.

Michigan Clinical Institute, Book-Cadillac Hotel, Detroit, March 12-14. Dr. H. G. Cummings, 606 Townsend St., Lansing 15, Chairman.

National Conference on Medical Service, Palmer House, Chicago, Feb. 10. Dr. Harlan A English, 139 North Vermilion St., Danville, Ill., Secretary.

National Conference on Rural Health, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

New Orleans Graduate Medical Assembly, Municipal Auditorium, New Orleans, March 10-13. Dr. Woodard D. Beacham, 1430 Tulane Ave., Room 105, New Orleans 12, Secretary.

Sectional Meetings, American College of Surgeons:

Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.

Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.

Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

Southeastern Surgical Congress, Atlanta, Ga., March 10-13. Dr. *Benjamin J. Beasley, 701 Hurt Bldg., Atlanta 3, Ga., Secretary.*

Southwest Allergy Forum, Hotel Baker, Dallas, Texas, March 2-4 Dr. James Holman, Medical Arts Bldg., Dallas, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

Congress of the International Diabetes Federation, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2-6 Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

International College of Surgeons, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., *Secretary-General.*

International Conference on Vitamins and Metabolism, Havana, Cuba, Jan. 25. Dr. Angel Vieta Barahona, Medical School, University of Havana, Havana, Cuba, General Chairman.

International Congress of Haematology, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

International Congress of Internal Medicine, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

International Congress on Neuropathology, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

International Congress of Physical Medicine, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

Latin American Congress of Physical Medicine, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

Pan-American Congress of Gastroenterology, Mexico City, D.F., May 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico City, D.F., Secretary.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

Pan-European Congress of Gastroenterology, Bologna, Florence and Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Orsola, Bologna, Italy, Secretary.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I and II*, Jan. 28-30; *Part II*, April 21-22; *Parts I and II*, June 16-18 or June 23-25; *Part I*, September. All centers where there are five or more candidates. Exec. Sec., Dr. John P. Hubbard, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Various Locations, July 18. Final date for filing application was Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

American Board of Dermatology and Syphilology: *Written.* Various centers. March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

American Board of Neurological Surgery: *Oral.* Chicago, May 1952. *Final* date for filing applications for the *May 1952* examination was *Jan. 1. Sec., Dr. W. J. German, 789 Howard* Ave., New Haven 4, Conn.

American Board of Obstetrics and Gynecology. *Written.* Feb. 1, 1952. Final date for filing applications was Nov. 1. *Oral.* Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Practical.* Philadelphia, May 29-June 3; Chicago, Oct. 6-10 and New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Orthopaedic Surgery. *Part II.* Chicago, Jan. 23-25. Final date for *filing applications for the* 1952 Part II examinations was Aug. 15. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

American Board of Otolaryngology. Toronto, May 13-17; Chicago, Oct. 6-10. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

American Board of Pediatrics: Written examination under local monitors, Jan. 11. *This is the only written* examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., Mar. 21-23; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Physical Medicine and Rehabilitation: *Parts I and II.* Chicago. June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

American Board of Preventive Medicine and Public Health. *Written.* Berkeley, Calif., Minneapolis, New Orleans and Baltimore. April 18. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology. *Part I.* Kansas City, Minneapolis, Philadelphia and San Francisco. May 3. Examination includes both oral and written examinations in the basic sciences. *Dates and places tentative.* Sec., Dr. Louis A. Buie, 102-110 2d Ave., S.W., Rochester, Minn.

Amercian Board of Psychiatry and Neurology: *Oral* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn

American Board of Radiology: *Oral.* Spring 1952. Final date for filing application was Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers. March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

Board of Thoracic Surgery: Various parts of the country. *Written.* Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. Willi M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Phemister, Dallas Burton ⊕ Chicago; Thomas D. Jones Professor Emeritus of Surgery at the University of Chicago, died in the Albert Merritt Billings Hospital December 28, aged 69, of pulmonary embolism, following an operation. Dr. Phemister was born in Carbondale, Ill., July 15,1882. He received his medical degree from Rush Medical College in 1904 and later studied in Paris, Berlin, London, and Vienna. During World War I he served as a major in the Army Medical Corps behind the lines of the battles of the Argonne, Chateau Thierry, St. Mihiel, and Champagne. He was attending surgeon at the University of Chicago Clinics and for many years was on the staffs of Presbyterian Hospital and Rush Medical College. Dr. Phemister established the department of surgery of the University of Chicago in 1925 and was chairman of it until he reached the retirement age. In 1940 he was designated the first holder of the Thomas D. Jones professorship, serving until 1947 when he became professor emeritus. In the same year a lectureship in his honor was established at the university. In 1939 he delivered the sixth E. Starr Judd Lecture of the University of Minnesota, Minneapolis, and in 1929 delivered the fifth Lewis Linn McArthur Lecture of the Billings Foundation at the Institute of Medicine of Chicago, of which he was president in 1948-1949. In 1925-1926 he was chairman of the Section on Surgery, General and Abdominal, of the American Medical Association; in 1948-1949 he served as president of the American College of Surgeons, in 1938 as president of the American Surgical Association, and he was past president of the Society of Clinical Surgery and the Chicago athological Society. He was a member of the American Ortho-dic Association, in 1948 became an honorary fellow of the al College of Surgeons of England, and last fall was awarded French Legion of Honor of France at a meeting in Paris of International College of Surgeons, of which he was vice-president from 1949 to 1951. Dr. Phemister was a specialist certified by the American Board of Orthopaedic Surgery and a member of the founders group of the American Board of Surgery, and he was one of the first to demonstrate that surgical shock is the result of loss of blood. His beginning studies in experimental physiology in 1926 and his subsequent investigations were major factors in the foundation of the modern concept of surgical shock, its treatment, and prevention. A specialist in bone pathology, Dr. Phemister devised a procedure for the arrest of the growth of bone at the epiphyses to equalize the length of the lower extremities in children and adolescents where growth had been altered by disease. His other research work contributing to present day surgery includes studies on the calcification of gallstones and studies on cancer of the esophagus and the upper portion of the stomach. In 1945 at the 20th anniversary celebration of his chairmanship of the department of surgery, University of Chicago, he was presented with a special bound volume of the December issue of *Annals of Surgery*, which consisted of contributions of his pupils and former associates.

Crisp, William Henry ⊕ Denver; born in London, England, Oct. 4, 1875; Denver and Gross College of Medicine, 1907; for many years a member of the faculty of his alma mater; for 11 years a member of the American Board of Ophthalmology, of which he had once been chairman; member of the American Academy of Ophthalmology and Otolarngology, American Ophthalmological Society, Association for Research in Ophthalmology, and the Royal College of Physicians and Surgeons of Canada; repeatedly elected to office in the Colorado Ophthalmological Society; fellow of the American College of Surgeons; in 1932 member of the House of Delegates of the American Medical Association; director, former editor and, since the inception of the *American Journal of Ophthalmology*, director of the abstract department; in 1944 was presented with a watch in appreciation of his long service to the journal and for outstanding contributions to ophthalmology; editor of "Ophthalmic Yearbook"; was especially honored at the Pan-Americ Congress of Ophthalmology in Havana in 1948; affiliated with Denver General, Colorado General, and Mercy hospitals; di October 16, aged 76, of cerebral hemorrhage.

Hall, Custis Lee ⊕ Washington, D. C.; born in Washingto July 15, 1888; George Washington University School of Medicine, Washington, D. C., 1912; clinical professor of surgery a his alma mater; specialist certified by the American Board o Orthopaedic Surgery; member of the International College o Surgeons and past president of the United States chapter; serve as president of the Washington Orthopedic Club and the Washington Medical and Surgical Society; member of the America Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served in France during World War I; affiliated with Naval Medical Center, Bethesda, Md., Central Dispensary and Emergency Hospital, Garfield Memorial Hospital, Georg Washington Hospital, Children's Hospital, Columbia Hospita for Women and Lying-in Asylum, St. Elizabeth's Hospital, Crippled Children's Clinic of Gallinger Municipal Hospital, Veteran Administration Hospital, and Doctors Hospital, where he die November 10, aged 63, of complications following abdomina surgery.

Corbett, James Frank, Minneapolis; born in Chippewa Fall Wis., Feb. 16, 1872; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; professor emeritus of neurosurgery at his alma mater and formerly professor of surgery at the graduate school; member of the founders group of th American Board of Surgery; member of the American Medica Association, Western Surgical Association, Minnesota Academy of Medicine, and Minnesota Neurological Society; fellow of th American College of Surgeons; past president of the Hennepi County Medical Society and the Minnesota State Medical Association; served during World War I; on the staffs of Minneapolis General, Asbury, Swedish, St. Mary's, and Abbott hospitals; died November 6, aged 79, of coronary heart disease.

Ourian, Adom K. ⊕ New York; born in Constantinople Aug. 1 1888; University of Istanbul Medical Faculty, Turkey, 1914 specialist certified by the American Board of Radiology; member of the Radiological Society of North America; captain in medica corps of Turkish Army from 1915 to 1918; for many years affiliated with the New York Post Graduate Medical School an Hospital; formerly on the staffs of the Sea View Hospital i Staten Island, Southside Hospital in Bayshore, and Central Islip (N. Y.) State Hospital; died in University Hospital October 29 aged 63, following an operation for intestinal obstruction.

Lescohier Alexander William ⊕ Grosse Pointe, Mich.; Detroi College of Medicine, 1909; past president of the American Dru Manufacturers Association; member of the Industrial Medica Association; for many years associated with Parke, Davis an Company, of which he had been president, and at the time o his death a member of its board; in 1937 was awarded an honorary degree of doctor of science by Wayne University; died in th Charles Godwin Jennings Hospital, Detroit, November 17, age 66, of spontaneous subarachnoid hemorrhage.

Bernstein, Joseph ⊕ New York; Indiana University School o Medicine, Indianapolis, 1937; served during World War II; di October 16, aged 41.

Bourland, Robert Collyer ⊕ Rockford, Ill.; University of Michigan Medical School, Ann Arbor, 1899; an Associate Fellow o the American Medical Association; past president of the Winnebago County Medical Society; served as major in the Illinoi National Guard; member and past president of the staff of Rockford Memorial Hospital; on the courtesy staffs of St. Anthon and Swedish-American hospitals; past president of the Rockford sanitary district board of trustees; died November 9, age 75, of pneumonia.

⊕ Indicates Fellow of the American Medical Association.

Boyd, Foster Jackson, Mason, Ohio; Ohio-Miami Medical College of the University of Cincinnati, 1912; member of the American Medical Association; affiliated with Good Samaritan, St. Mary's, and Bethesda hospitals in Cincinnati; died September 4, aged 68, of carcinoma.

Brown, Francis Xavier, Brooklyn; Long Island College Hospital, Brooklyn, 1913; member of the American Medical Association; fellow of the American College of Surgeons; served during World War I; on the staffs of the Kings County, Holy Family, St. Peter's, and Victory Memorial hospitals; died in the Veterans Administration Hospital in Fort Hamilton November 24, aged 62, of carcinoma of the lung.

Bulson, Charles Herman ⊕ Napa, Calif.; Gross Medical College, Denver, 1889; past president of the Napa County Medical Society; served during World War I; affiliated with Parks Victory Hospital, where he died November 19, aged 83.

Carlin, George Edward, Amityville, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1927; member of the American Medical Association; physician in charge of the Louden-Knickerbocker Home; died in Brunswick General Hospital November 28, aged 49, of gangrene of the colon and perforated duodenal ulcer.

Chapple, Richard Rixon, Billings, Mont.; University of Michigan Medical School, Ann Arbor, 1930; member of the American Medical Association; in 1950-1951 vice-president of the Yellowstone Valley Medical Society; served during World War II; formerly on the staff of Northern Pacific Hospital in Missoula; died in Graduate Hospital, Philadelphia, November 24, aged 46, of rupture of an intracranial aneurysm.

Christie, Welman Blake, Boston; Boston University School of Medicine, 1927; member of the New England Obstetrical and Gynecological Society; served during World War I; on the staff of Audubon Hospital; died in Cambridge, Mass., November 19, aged 54, of coronary thrombosis.

Clark, Edward Russell ⊕ Castleton, Vt.; Dartmouth Medical School, Hanover, N. H., 1885; an Associate Fellow of the American Medical Association; served as local health officer and as selectman; on the staff of the Rutland (Vt.) Hospital; represented Castleton in the state legislature; died November 26, aged 93, of cerebral hemorrhage.

Coley, Stephen Washington ⊕ Jackson, Miss.; Memphis (Tenn.) Hospital Medical College, 1908; specialist certified by the American Board of Radiology; member of the American College of Radiology; for many years on the staff of Methodist Hospital in Memphis; died in Baptist Hospital November 2, aged 67.

Cooley, Halsey E., Rochester, N. Y.; University of Buffalo School of Medicine, 1891; member of the American Medical Association; for many years county coroner; died November 26, aged 83, of uremia and arteriosclerosis.

Cooper, Roy Cummings, Pittsburgh; Boston University School of Medicine, 1901; specialist certified by the American Board of Otolaryngology; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staff of Shadyside Hospital, of which he was past president; died November 11, aged 77, of general arteriosclerosis and Parkinson's disease.

Coss, Walter L., New Brighton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1899; member of the American Medical Association; on the staff of Beaver Valley General Hospital; died October 16, aged 74, of coronary thrombosis.

Crawford, Horace Gilbert ⊕ Bartlesville, Okla.; University of Nashville (Tenn.) Medical Department, 1911; also a graduate in pharmacy; fellow of the American College of Surgeons; past president of the Washington-Nowata Counties Medical Society; for many years physician for the Missouri-Kansas-Texas Railroad; died October 14, aged 71, of coronary thrombosis.

Fritz, William Wallace, Philadelphia; Medico-Chirurgical College of Philadelphia, 1904; died in Elm Terrace Hospital, Lansdale, Pa., November 24, aged 79, of cerebral hemorrhage, arteriosclerotic heart disease and diabetes mellitis.

Goode, Ernest Whitby, New York; Trinity Medical College, Toronto, Ont., Canada, 1892; member of the American Medical Association; died October 16, aged 82.

Greaves, John Percy ⊕ Great Falls, Mont.; University of Minnesota Medical School, Minneapolis, 1915; past president of the Cascade County Medical Society and the Montana Academy of Oto-Ophthalmology; died in Columbus Hospital November 7, aged 63, of cardiac decompensation.

Henderson, Alfred Collard ⊕ Stamford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1903; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; affiliated with Stamford Hospital; died November 23, aged 77, of coronary disease.

Karlstrom, Arthur Elof, Minneapolis; University of Minnesota Medical School, Minneapolis, 1936; member of the American Medical Association and American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; clinical instructor of pediatrics at his alma mater; affiliated with Asbury Hospital and St. Barnabas Hospital, where he died October 4, aged 49, of uremia.

Kass, Joseph Borissow ⊕ Hamtramck, Mich.; University of Texas School of Medicine, Galveston, 1913; practiced in Detroit, where he was on the staff of St. Joseph's Mercy Hospital; died November 3, aged 65.

Lally, William James ⊕ Washington, D. C.; Georgetown University School of Medicine, Washington, 1912; affiliated with Georgetown, Providence, and Episcopal Eye, Ear, and Throat hospitals; served overseas during World War I; died November 6, aged 63, of coronary occlusion.

Levine, Samuel ⊕ Brooklyn; University and Bellevue Hospital Medical College, New York, 1909; affiliated with Beth El Hospital; died November 28, aged 69.

Lowe, John J., Sand Springs, Okla.; University of West Tennessee College of Medicine and Surgery, Jackson, 1905; died August 16, aged 80, of carcinoma.

MacDuff, Robert Bruce ⊕ Flint, Mich.; University of Michigan Medical School, Ann Arbor, 1917; specialist certified by the American Board of Radiology; member of the Radiological Society of North America; served during World War I; vice-chairman of McLaren General Hospital; served on the staff of Hurley Hospital, where he died October 28, aged 59, of cerebral hemorrhage.

McCarthy, William John ⊕ South Ozone Park, N. Y.; Tufts College Medical School, Boston, 1924; affiliated with Queens General and Mary Immaculate hospitals in Jamaica and St. Mary's Hospital in Brooklyn, where he died October 26, aged 52, of heart disease.

McCloskey, John Francis ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1901; emeritus clinical professor of surgery at Woman's Medical College of Pennsylvania; veteran of the Spanish-American War and served overseas during World War I; fellow of the American College of Surgeons; formerly Register of Wills; a founder and consulting surgeon at Chestnut Hill Hospital; affiliated with the Skin and Cancer Hospital and Woman's Hospital; died November 22, aged 74, of coronary disease.

McCrea, Edward Lee ⊕ Table Rock, Neb.; University Medical College of Kansas City, Mo., 1900; an Associate Fellow of the American Medical Association; died in Bryan Memorial Hospital, Lincoln, October 15, aged 86, of carcinoma of the prostate.

McIlvaine, Mary Josephine ⊕ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1925; certified by the National Board of Medical Examiners; died November 5, aged 50, of coronary occlusion.

McIntyre, Thomas C., Detroit; Detroit Colle [illegible] ge, 1904; affiliated with Providence Hospital, w [illegible] em-ber 6, aged 73, of carcinoma of the [illegible]

Martin, Robert Gerald, Chicago; [illegible] olle Nashville, Tenn., 1893; died [illegible]

Meredith, Charles Arthur, Manchester, Mo.; Marion-Sims College of Medicine, St. Louis, 1892; died November 22, aged 83.

Mills, John Harold ⊕ Portland, Ore.; University of Chicago, the School of Medicine, 1933; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; certified by the National Board of Medical Examiners; served during World War II; affiliated with the Veterans Administration Hospital, where he died October 14, aged 49.

Myers, Aumond Dale ⊕ Baldwin Park, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1935; certified by the National Board of Medical Examiners; died near Paulina Lake, Ore., November 3, aged 44, in an airplane crash.

Ovsey, Abraham Moses, Santa Monica, Calif.; College of Physicians and Surgeons, Los Angeles, 1917; died in Cedars of Lebanon Hospital, Los Angeles, October 18, aged 71, of acute shock, and acute coronary thrombosis.

Reid, Robert Lincoln Doane ⊕ New York City; Columbia University College of Physicians and Surgeons, New York, 1903; died September 29, aged 79.

Robertson, William D. ⊕ Mount Vernon, N. Y.; Bellevue Hospital Medical College, New York, 1898; member of the staff of Mount Vernon Hospital, where he died November 25, aged 79.

St. Clair, Francis Alphonzo, Washington, D. C.; Georgetown University School of Medicine, Washington, 1890; member of the American Medical Association; also a graduate in pharmacy; on the staff of the Central Dispensary and Emergency Hospital; died November 10, aged 90, of myocardial degeneration and mitral insufficiency.

, William A., Holdrege, Neb.; University of Louisville (Ky.) Medical Department, 1896; member of the American Medical Association; at one time postmaster; formerly practiced in Bertrand, where he was for many years member of the board of education; died October 23, aged 87.

Shuster, Mitchell Norbert ⊕ New York; University and Bellevue Hospital Medical College, New York, 1922; served during World War II; died October 23, aged 53.

Strickler, Florence Dunlop ⊕ San Francisco; Leland Stanford Junior University School of Medicine, San Francisco, 1916; formerly vice-president of the San Francisco County Medical Society and president of the American Association of University Women; affiliated with Children's and Stanford University hospitals; died November 21, aged 59, of coronary thrombosis.

Tasse, Joseph Chrysanthe Edward, Worcester, Mass.; School of Medicine and Surgery of Montreal, Canada, 1889; died November 24, aged 86, of carcinoma of the bladder.

Taylor, Francis Albert, Bridgeport, Conn.; College of Physicians and Surgeons, Boston, 1905; died in Seffner, Fla., October 29, aged 71, of a heart attack.

Thomas, Camp Chandler, Lewiston, Maine; University of Michigan Homeopathic Medical School, Ann Arbor, 1917; member of the American Medical Association, New England Roentgen Ray Society, Radiological Society of North America, and American College of Radiology; specialist certified by the American Board of Radiology; served on the staff of St. Mary's General Hospital; died November 15, aged 69, of lymphatic leukemia and carcinoma.

Timm, Harry Emil Louis ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1915; fellow of the American College of Surgeons; affiliated with South Shore Community Hospital, where he died December 3, aged 60, of gastrointestinal hemorrhage and ruptured varix.

Tryon, Lewis Royer, Miami Beach, Fla.; Jefferson Medical College of Philadelphia, 1893; served overseas during World War I; later decorated by Estonia and Latvia for service with the Red Cross in those countries; formerly affiliated with the Veterans Administration in various cities; died in Coral Gables November 17, aged 79, of coronary sclerosis and nephrosclerosis.

Tucker, Nathaniel Albert, Henderson, Tenn. (licensed in Tennessee in 1914); died September 3, aged 72, of cerebral hemorrhage.

Wachtel, Jacob Burton, Oklahoma City; Beaumont Hospital Medical College, St. Louis, 1898; died in Wesley Hospital October 16, aged 73, of ruptured abdominal aortic aneursym, and arteriosclerosis.

Walden, James Gould, Parkersburg, W. Va.; Baltimore University School of Medicine, 1892; died October 14, aged 89, of cerebral hemorrhage.

Warren, Elbert Taylor ⊕ Stuart, Iowa; Drake University College of Medicine, Des Moines, 1910; died October 1, aged 66 of coronary artery disease.

Watson, Ira Charles, Henderson, Ky.; Meharry Medical College, Nashville, Tenn., 1914; died September 27, aged 60, of carcinoma of the lung.

Whelpley, George Frederick, Boston; University of Marylan School of Medicine, Baltimore, 1903; died in Boston City Hospital October 26, aged 78, of cerebral thrombosis.

White, John Lawrence, Chicago; Northwestern University Medical School, Chicago, 1924; chief sanitary officer for the cit health department; member of the Society of American Bacteriologists; died in Mayo Clinic, Rochester, Minn., Novembe 14, aged 62, of carcinoma.

Williams, Edward Russell, St. Petersburg, Fla.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medica Society, American Medical Association and American Ophthalmological Society; served on the staffs of the Boston Cit Hospital and Cambridge (Mass.) Hospital; died in Gulfpor October 18, aged 79, of arteriosclerotic heart disease.

Williard, George W. ⊕ Columbus, Ohio; Ohio Medical University, Columbus, 1897; for many years member of the boar of education, serving as president in 1914; served as physicia for the Ohio Penitentiary and the State School for the Blind medical director for the Columbus and Southern Ohio Electric Company for many years; a director of the Central Buildin Loan and Savings Company; died November 5, aged 77, of coronary thrombosis.

Wills, Josephus Nicholas ⊕ Detroit; Detroit College of Medicine and Surgery, 1919; affiliated with Parkside, Wayne Diagnostic and Trinity hospitals; died September 17, aged 67, of heart disease.

Wilson, John Nants ⊕ Washington, D. C.; George Washingto University School of Medicine, Washington, D. C., 1927; member of the American College of Chest Physicians; affiliated wit the Veterans Administration; died November 3, aged 51.

Woods, Ralph Hueston ⊕ La Salle, Ill.; University of Illinoi College of Medicine, Chicago, 1913; also a graduate in pha macy; member of the American Academy of Ophthalmolog and Otolaryngology; fellow of the American College of Su geons; affiliated with St. Margaret's Hospital in Spring Valle Peoples Hospital in Peru, and St. Mary's Hospital; author "Cardinals of Optics, Physiological Optics, and Applied Refra tion"; composed many military band numbers; died in St. Mary Hospital October 16, aged 75, of cerebral hemorrhage.

Woodward, Floyd Owen, Jamestown, N. D.; University of Mi nesota Medical School, Minneapolis, 1914; member of t American Medical Association; specialist certified by the Ame can Board of Internal Medicine; affiliated with Jamestown a Trinity hospitals; died recently, aged 64, of hypertensive hea disease.

Zemer, Stanley Gillum ⊕ Lincoln, Neb.; Rush Medical Co lege, Chicago, 1913; member of the American Academy Ophthalmology and Otolaryngology; past president of the La caster County Medical Society; member of the school boar served during World War I; affiliated with St. Elizabeth's, Li coln General, and Bryan Memorial hospitals; died October 1 aged 68, of arteriosclerotic heart disease.

GOVERNMENT SERVICES

MEDICAL POLICY COUNCIL

The Armed Forces Medical Policy Council has approved the principle of providing armed forces scholarships in approved medical schools as part of a long-range program for the procurement of medical officers. The students accepting these scholarships would be obligated for service in the armed forces. The council is studying plans for implementing this policy.

The Departments of the Army, Navy, and Air Force are now studying the possibility of awarding point credits to reserve medical officers who attend annual meetings of the Association of Military Surgeons. This action follows a decision of the Armed Forces Medical Policy Council that the awards were desirable. The three military departments will determine whether this plan can be applied to their respective medical reserve systems.

At the recommendation of the Armed Forces Medical Policy Council, a new, portable, field x-ray unit and 60-second developer, recently demonstrated to the council, was sent to Korea for field testing in December 1951. This x-ray unit, almost one-half the weight of field units currently in use, can be assembled or dismantled in a matter of minutes. If the results of the Korea test come up to expectations, this type of unit will relpace the heavier x-ray equipment now in use by the armed forces in the field.

Dr. Melvin A. Casberg was appointed vice-chairman of the Armed Forces Medical Policy Council, effective Jan. 1, 1952. He will serve as the principal assistant to the chairman, Dr. W. Randolph Lovelace II. Dr. Casberg was born in India, of American missionary parents. He received an M.D. degree from St. Louis School of Medicine in 1936. In 1941 he became surgeon-in-chief at the Umri Mission Hospital in Berar, India, and in the following year joined the United States Army 21st General Hospital, serving with this unit through the North African campaign, and later was appointed station surgeon in Chungking, China. He was in private practice in surgery from 1946 to 1949 at Long Beach, Calif. On Aug. 1, 1949, Dr. Casberg was appointed dean of the St. Louis University School of Medicine. He resigned from this position to accept the vice-chairmanship of the Armed Forces Medical Policy Council.

ATOMIC ENERGY COMMISSION

Fellowship Program.—The names of 343 holders of fellowships sponsored by the Atomic Energy Commission have been announced by the Oak Ridge Institute of Nuclear Studies, which is administering the fellowship program for the 1951-52 school year.

Dr. Russell S. Poor, chairman of the institute's University Relations Division, said that fellowships had been awarded for study at 70 American universities and research institutions and seven others located abroad. The fellowships are for research and study on the predoctoral and postdoctoral level, with 300 predoctoral and 43 postdoctoral fellows. Of the predoctoral fellows, 223 are studying the physical sciences and 77 the biological sciences. On the postdoctoral level, 21 are in the physical sciences, 17 in the biological sciences, and 5 in the medical sciences. All holders of fellowships have been investigated by the Federal Bureau of Investigation in accordance with existing laws.

The AEC fellowship program is enabling American students to study and carry out research under the direction of the world's scientific leaders. The university faculty members who direct a student's research include many Nobel prize winners and other noted scientists. Among them are Enrico Fermi, Nobel prize winner at the University of Chicago, who built the first uranium reactor; I. I. Rabi, of Columbia University, another Nobel prize winner for his work in physics; H. A. Bethe, Cornell University physicist who postulated the theory of the chain reaction that takes place in the sun. Among the Europeans who will direct the research and study of the Americans are Dr. Werner Heisenberg, of Goettingen, Germany, also a Nobel prize winner, whose discovery of the uncertainty principle in quantum mechanics is considered by many as vital to the development of atomic energy as the Einstein mass-energy relationship; Niels Bohr, Danish winner of the Nobel prize, who carried news of uranium fission to this country early in 1939; and Otto Frisch, Jacksonian Professor of Natural Philosphy at Cambridge University, England.

Radioisotopes for Shipment.—A total of 270 radioisotopes were supplied for shipment to 26 different research organizations during 1951, by the Brookhaven National Laboratory, Upton, N. Y. The figures do not include the several hundred radioisotopes used in research by staff scientists of the laboratory, which is operated by Associated Universities, Inc., under contract with the U. S. Atomic Energy Commission.

Authorization to receive radioisotopes is issued by Oak Ridge National Laboratory, in Tennessee, which refers to Brookhaven requests for delivery in the northeast of short-lived radioisotopes. Radioisotopes many times more radioactive than those obtainable in the Oak Ridge reactor are also supplied by Brookhaven.

Of the Brookhaven shipments, 100 were of radioactive sodium (Na^{24}) and 91 shipments were radioactive potassium (K^{42}), which lose half their radioactivity every 15 and 12.4 hours, respectively. Because sodium and potassium are basic components of the human body, radioisotopes of each element can be used as tracers to gain information on the efficiency with which the respective element is being used in the body.

PUBLIC HEALTH SERVICE

Mental Health Clinics Survey.—There are now 1,228 mental health clinics operating in the United States, 902 or 73% of them serving children, according to a survey reported in the November 30 issue of *Public Health Reports*. The survey, undertaken in the spring and summer of 1950 to provide information for the Mid-Century White House Conference on Children and Youth, further indicates 475 clinics have been established since 1947. Of the total number of mental hygiene and general psychiatric clinics surveyed, one-third serve children only and 44% serve both adults and children. During 1950 at least 150,000 children received treatment. One out of nine clinics serving children provide diagnostic services only. The others furnish treatment.

The northeast section of the country has more than half of the clinics although it has only one-quarter of the total population. The ratio of 1.67 clinics per 100,000 population in this area is more than four times that for the South. Three states, Idaho, Nevada and Wyoming, have no operating clinics. Almost half of the clinics are in the 108 cities with a population of 100,000 or more. About three-fourths of the clinics are the responsibility of state, county, or city health and welfare agencies, or are connected with courts, school systems, or the Veterans Administration. The remainder are sponsored by voluntary welfare agencies, mental hygiene societies, and other nonofficial organizations.

Symposium on Blood Vessel Grafts.—A symposium on blood vessel grafts and related problems was held at the National Institutes of Health, Bethesda, Md., Jan. 10, 1952. Scientists working in the field reviewed current progress in arterial and venous transplants and in blood vessel preservation technics in a series of formal papers. The meeting was open for general discussion. Dr. Daniel C. Elkin, chairman of the department of surgery, Emory University, Atlanta, Ga., presided.

FOREIGN LETTERS

BRAZIL

Immunobiologic Relation Between Tuberculosis and Leprosy.—A paper was published by Drs. Nelson Souza Campos, José Rosemberg, and Jamil Aun on the immunobiologic relation between tuberculosis and leprosy. The lepromin test was performed on 38 children who had been BCG-vaccinated 12 months previously at the ages of 1 to 18 months. All were healthy children of leprous parents, from whom they had been separated at birth. In 100% of the cases there was a positive reaction by the third week from the date of introduction of the lepromin into the derma, with 21 patients showing a + reaction and 17 showing ++. The lepromin test performed at the time of BCG-vaccination resulted in positive reactions in all cases except four of those in which a single dose of BCG was administered; a year later reactions were observed in these four cases also.

There was complete dissociation between tuberculin sensitivity and lepromin reaction. In two cases positive reactions to the Mantoux test (tuberculin in 1:10 dilution) never occurred. Of the 36 remaining cases in which the allergy developed, 29 patients became entirely tuberculin-negative from 6 to 11 months before the lepromin test. The results of the above investigation confirm previous studies made by the authors with healthy children of parents having no history of leprous infection.

osporosis.—Drs. João Alves Meira and Marcelo Correa pub- ed their observations in 28 cases of human infection by occidia belonging to the genus Isospora. These cases were found in 22,836 stool specimens examined from December, 1942, through June, 1950, at the Faculdade de Higiene and Instituto Adolfo Luts of São Paulo. The cases were divided into two groups; one composed of 15 cases in which the parasite was identified as Isospora hominis (Railliet and Lucet, 1891), the other, of 13 cases in which the Coccidium was identified as I. belli (Wenyon, 1923). In the first group the Coccidium was discharged in the feces usually as a single sporocyst containing four vermiform sporozoites. The average size of these sporocysts was 14.8 μ in length by 9.8 μ in width. In only three cases were ripe oocysts with the two sporocysts, each containing four sporozoites, found together with the isolated tetrazoic sporocysts. It is important to emphasize that in all 15 cases the coccidia discharged in the feces were in the mature stage. On the other hand, in the 13 cases of the second group only the unsegmented oocysts were found in the feces. Rarely, oocysts containing two sporoblasts were found in recently passed feces. In these cases the oocysts were usually unsegmented when discharged in the feces, but within 48 hours, at room temperature, sporocysts containing four sporozoites developed. The average size of the oocysts was 28.3 μ in length by 13.5 μ in width. The average size of the sporocysts was 12.9 μ in length by 10 μ in width. In the cases studied it was not possible to demonstrate the pathogenic action of I. hominis in man, as the clinical symptoms either were absent or occurred when other intestinal parasites also were present. In regard to infection by I. belli the authors observed the following three possibilities: (*a*) the presence of I. belli, without clinical symptoms; (*b*) the presence of gastrointestinal symptoms that may be caused by other parasites; and (*c*) the presence of gastrointestinal symptoms caused by I. belli infection.

Esophageal Hiatus Hernia.—The importance of esophageal hiatus hernia has been recognized in recent years. It was formerly considered rare, but is now known to be a relatively common condition, although it is often obscured by vague digestive, cardiovascular, and respiratory disturbances. Roentgen examination has contributed to exact diagnosis, but the details that make this diagnosis possible are not yet a part of the radiologist's routine, although the fundamental technique was established by Ackerlund in 1926. Drs. Mario R. Oliveira, José F. Pontes, and A. Ferreira Filho, of the department of surgery, Hospital das Clinicas, University of São Paulo, recently reported on the analysis of more than 4,500 cases observed at the gastroenterology department. Among 3,000 patients with diseases of the digestive system from 1941 to 1948, only two cases of esophageal hiatus hernia were diagnosed (0.07%). In 1949 and 1950, when more attention was given to dyspeptic symptoms and more special techniques were used by radiologists to reveal the structures of the esophageal hiatus region, 28 cases of hernia were found among 1,500 patients (1.87%).

Of the 28 patients, 19 (63.3%) were men, and 11 (36.7%) were women, with ages ranging from 23 to 76 years. The cases were of three types: paraesophageal hernias, 6 cases (20%); gastric hernias caused by congenital short esophagus, 3 cases (10%); and pulsion type hiatus hernias (incompetent hiatus), 21 cases (70%). Of the latter, 19 were reversible and 2 irreversible. The similarity of percentage distribution with that reported by Harrington (1948) and Merendino, Varco, and Wangensteen (1949) is interesting; they reported 20 to 33% for the first type, 7% for the second, and 75 to 80% for the third. Of the 30 patients, 25 gave definite information about the duration of the illness, which varied from 1 to 25 years, with an average of 7.8 years. The most frequent digestive symptoms were heartburn, 26 cases (86.2%); retrosternal and epigastric pains, 14 (46.7%); belching, 11 (36.7%); indigestion, 11 (36.7%); heaviness and flatulence of the stomach, 11 (36.7%); worsening of symptoms while in the recumbent position, 9 patients (30.0%); dysphagia, 5 patients (16.7%); and hematemesis or melena, 4 patients (13.7%). The most frequent cardiovascular and respiratory symptoms were palpitations, 11 cases (36.7%); tightness of the chest, 10 (33.3%); dyspnea, 9 (30%); and increased breathing difficulty while in the recumbent position, 9 (30%).

Clinical and Statistical Survey of Transfusion Reactions.—Dr. Ruy Faria, head of the blood bank, São Paulo Municipal Hospital, in a recent report, analyzed reactions after blood transfusions clinically and statistically. Among 2,069 patients who received transfusions during the first four years of the service, 78 reactions were registered (3.76%). This total is divided as follows: 64 pyrogenic reactions (3.09%), 9 allergic reactions (0.43%), 3 hemolytic reactions (0.14%), 1 circulatory overload (0.05%), and 1 pulmonary embolism (0.05%). The author made a careful survey of the different types of reactions, especially from the standpoints of treatment and prevention. He describes the exacting preventive measures against pyrogenic reactions that are now taken at the service. He asserts that pyrogenic reactions still occurring at the Municipal Hospital are due to minor incompatibilities, as pointed out by Muirhead and Hill and by Wiener. This is confirmed by the prevalence rate of these reactions, which is somewhat below the maximum 4% allowed by American physicians. The present rate in Dr. Faria's department is markedly lower than the 3.09% figure given above for the entire four-year period. Allergic donors or persons having had a meal with lipids a short time before are not accepted for transfusions. In spite of these and other precautions, allergic reactions continue to occur at a constant rate, somewhat below the conventional 0.45%. Hemolytic reactions were rare (0.14%), and two of the three cases reported occurred at the beginning of the service. The first patient, a woman at childbirth, died, but the exact nature of the reaction could not be ascertained. Although the record shows that the transfusion was immediately stopped, and nothing was injected afterward, the woman died two days later, icteric and anuric. The second case, which occurred during the first year of the service, was grave but not fatal. This patient was also a woman, Rh-negative and in the third month of pregnancy. Anti-Rh serum was not yet available, and the patient received 250 cc. of Rh-positive blood, although she had been sensitized by 10 previous pregnancies, all terminating with stillborn fetuses or babies who died at a very early

---

The items in these letters are contributed by regular correspondents in the various foreign countries.

age. They were all Rh-positive, since their father was homozygous. In the third case, the reaction was detected immediately after the beginning of a drip transfusion. The patient, erroneously classified as AB because of powerful cold agglutinins, reacted strongly to the B blood injected, as she belonged to the A group. Since then, blood classification is always done with washed cells, and a routine direct protein test is made. Death, due to a circulatory overload of 200 cc. of plasma, occurred while she was in shock; venous turgor was undetected in the emergency.

ITALY

Society of Cardiology.—A branch of the Italian Society of Cardiology has been established in Bologna for the provinces of the Emilia and the Romagna regions. Prof. Antonio Gasbarrini, head of the medical clinic of the University of Bologna, was elected president. Professor Condorelli, head of the medical clinic of the University of Catania, gave a report on physiopathology of the pulmonary pressure discussing his technique for the continuous recording of the pulmonary and femoral arterial pressure in man. By means of research and demonstration of the variations of the pulmonary arterial pressure that occur secondary to breathing, he showed that the neuroregulatory apparatus of the pulmonary arterial pressure is definitely different from the apparatus that regulates the arterial pressure of the systemic circulation. Stimulation of the proprioceptors of the systemic circulation does not influence the tonus of the pulmonary artery, and, in the instances in which such modifications are noticed, these are due to reflex variations of the cardiac activity. The nitrites, which, in proper doses, exert a stimulating effect on the chemoreceptors of the great arterial circulation, do not cause any modification of pressure in the pulmonary artery. Epinephrine, by stimulating the adrenergic nerve endings, is responsible for an increase of the pressure in the pulmonary artery; the pulmonary hypertension due to epinephrine is often of longer duration than that occurring in the arteries of the greater circulation, because the secondary stimulation of the pressoreceptors that rapidly control the hypertension of the general arterial circulation remains without effect on the pulmonary circulation. On the other hand, the use of acetylcholine has never induced a drop in the pulmonary pressure in spite of the manifest hypotensive effect recorded by the tracing of the femoral arterial pressure. Even by potentiating the action of acetylcholine with the so-called anticholinesterases, pulmonary arterial pressure is not lowered, although there is a pronounced drop in the arterial pressure of the greater circulation. Research has shown that it is impossible to prove the existence of cholinergic terminations in the system of the pulmonary artery. Nicotinic acid is a drug that may cause transient pulmonary hypertension, probably by stimulating pulmonary chemoreceptors. The pulmonary hypertension due to nicotinic acid develops even when the drug induces hypotension of the arteries of the systemic circulation. By simultaneously recording the pulmonary and the femoral arterial pressure, Professor Condorelli demonstrated that frequently rhythmical waves of arterial tonus can be seen that have no relation to analogous variations of the pulmonary arterial pressure. Arterial hypertension, in the absence of signs of circulatory insufficiency, is to be considered as a normotensive condition and occasionally as pulmonary hypotension. This concept, deduced from pathological study, constitutes a factor of fundamental importance to the concept of the complete independence of the regulation of the arterial pressure in the systemic and the pulmonary circulation.

Professor Altana presented a paper on electrocardiographic modifications related to attacks of tachycardia. After prolonged attacks of paroxysmal tachycardia, alterations of the electrocardiographic tracing are observed that especially involve the T wave and that regress within a few days to some weeks. Cognizance of this type of electrocardiographic tracing is of great practical importance, because, if the origin is not recognized as referrable to the preceding tachycardiac attacks, an erroneous diagnosis of severe organic myocardiac lesion, even of the infarction type, may be made.

Dr. Lenzi and Dr. Facci presented a report on a girl aged 16, in whom a systolic murmur caused by the mitral valve was observed when, at the age of 1, she contracted an exanthematous disease. The electrocardiogram revealed a complex picture, characterized by great morphological variability, partial auricular arrhythmia, and periods of auricular tachysystole, with 2:1 block. The phonocardiographic study revealed that when preexcitation was more noticeable and a considerable reduction of the PQ interval was determined, a murmur was heard, which, when recorded, preceded the rapid complex observed at 0.06 second from the end of the auricular tracing. This heart sound was not heard when shortening of the QRS complex with lengthening of the PQ interval was elicited either by spontaneous variations or by the actions of drugs (acetylcholine). According to the speakers, from the clinical point of view, the patient's disease could be classified as a complex congenital lesion (moderate mitral stenosis associated with intraventricular obstruction). This case is of great interest, as it shows the presence of the preexcitation phenomenon. This condition may have been brought about by endocarditis of the right side of the heart and maintained by hypertension in this side of the heart.

Dr. Garbin and Dr. Gasbarrini spoke of the arteriolar vasoactive effects of histamine and synthetic antihistamines. They studied, with the photoplethysmographic method, 23 healthy persons with a normal neurovegetative tonus. The arteriolar pulse of the finger tips and the maximum and minimum systolic and diastolic pressure of each patient were recorded under basic conditions; then 1 cc. of histamine was injected intramuscularly, and recordings of pulse and pressure were made every 15 minutes for one hour. On succeeding days, the action of antihistamine and epinephrine was ascertained and, on another day, histamine and antihistamine were administered simultaneously. On the basis of the results, the speakers concluded that histamine, in addition to its known action on the capillaries, is capable of pronounced effects on the arteriolar tonus, producing a diphasic reaction, consisting of a primary dilatation followed by a moderate contraction. From the clinical point of view, the speakers' report emphasized the importance of the photoplethysmographic recording for the comparative study of the effects of various drugs on the blood vessels.

Epidemic of Goiter.—Dr. Bizzarri gave a report at the Filippo Pacini Medical Academy on a goiter epidemic that occurred in the province of Pistoia from 1941 to 1945; in addition to making use of his own observations, the speaker also made use of the personal communications of physicians in the regions in which the disease occurred. Subjective symptomatology was always scarce; objective findings were without value, except for the abnormal pulse ratio. The course of the disease was always favorable, with complete regression within a maximum period of three months. The various methods of treatment did not produce any specific effect since equally satisfactory results were observed in instances in which medical-dietetic treatment was omitted. Young persons, predominantly females, were those most affected. The disease occurred exclusively in the plains, outside of some communities in the mountains in which goiter is endemic. In his study of the etiology and pathogenesis, the speaker examined the water system of the region and concluded that this was not the means of transmission of a bacterium with thyrotropic activity. The fact that cases of goiter were not observed in army stations, colleges, and other institutions excluded the possibility of infective goiter. The analysis of the water and of the soil, carried out in an attempt to disclose a possible sudden modification in their iodine content, gave negative results. As for atmospheric precipitation, a major drought was reported in the period from 1942 to 1945; however, the speaker did not think that this was a determining influence, although it might have been an auxiliary factor. No importance was attributed to the factor of nutrition or vitamin deficiency. The speaker believed that psychic elements were concurrent factors, and he proposed the hypothesis that a persistent emotional condition may have caused some diencephalic-hypophysial stimuli creating or favoring those conditions that caused the appearance of goiter. The emotional factor is perhaps correlated with the particular psychic strain endured by the population at the time in which the war was fought in that zone.

CORRESPONDENCE

CLEVELAND ACADEMY MEDICAL CARE PLAN

To the Editor:—Voluntary Health Insurance Plans developed and sponsored by county medical societies and tailored to fit local needs are an important cornerstone in the 12 point program of the American Medical Association. I would therefore like to report on a new plan developed by the Academy of Medicine of Cleveland, which went into effect about September 1 and which will provide complete medical care in hospitals to Cleveland families earning $5,000 a year or under, at a cost of less than 15 cents a day. A year of planning and preparation preceded the presentation of the plan for approval to academy active members, and it is interesting to note that 51% of the active members signed up to participate in the plan within 20 days after it was offered to them.

The Cleveland Academy Medical Care Plan is unusual from a legal standpoint. The individual physician who wishes to participate signs no contract with the insurance company; his only contract is with the academy itself. Under the contract, he agrees to limit his fees to families in the $5,000-and-under income group by a standardized schedule of fees. The physician's relationship, thus, is with his own county medical society, rather than with an outside commercial organization, and the plan is ministered by the academy.

The contract provides that any participating physician can withdraw from the plan at the end of any year, if he wishes, and prevents lowering of fees or inclusion of added services without his consent. He is paid by the patient, but can also be paid by the insurance company through the patient's endorsement. The insurance companies that have accepted the invitation of the academy to offer the plan to the public are Aetna Life, Connecticut General, Equitable Life Assurance Society, Great-West Life, John Hancock, Liberty Mutual, Massachusetts Mutual, Medical Mutual of Cleveland (the local Blue Shield type of company), Metropolitan Life, Mutual Benefit Health and Accident, New York Life, Northwestern National, Pacific Mutual, Provident Life & Accident, Prudential, and Travelers.

In brief outline, the Cleveland Academy Medical Care Plan provides the following benefits to a physician's patients who become subscribers:

1. Complete payment of all professional surgical and anesthesiological expenses incurred in hospitals by participating families earning $5,000 a year or less.

2. Complete payment of nonsurgical medical expenses incurred in hospitals of these families if they carry a medical rider on their policy.

3. Payment of a substantial share of all these expenses for families whose income is more than $5,000 a year.

4. A payment of $60 toward the obstetrical fee of all insured families.

5. Payment for professional services for procedures ordinarily performed in hospitals, when performed in a physician's office.

Major advantages that the plan offers to members of the academy include the following features:

1. A standardized fee schedule in line with average fees now charged to families in the $5,000-or-under income bracket here.

2. Greater freedom from collection problems.

3. A powerful weapon to halt the trend toward corporate (hospital) practice of medicine.

4. A long-range answer to those who say that only the government can provide low-cost medical care.

Charles S. Higley, M.D.
2009 Adelbert Road
Cleveland 6.

LEPROSY

To the Editor:—The term Hansen's disease is widely used avoid confusion between the disease called leprosy in mod medicine and the word leprosy as used in the Bible. Ind Hansen's disease has been made the official name by the legi ture of the Hawaiian Islands, where the problem is serio practical and no mere academic quibble.

The physicians who urge this action firmly agree that med nomenclature should not be changed capriciously or for tri reasons. Thus, malaria is not caused by "bad air," involutio melancholia is not caused by "black bile," and psoriasis is characterized by severe itching. Yet it would be preposter to change any of these terms simply because they are technic inaccurate. But the use of one word for both the disease so studied by Hansen and for a status under the Hebrew ceremo law cannot be dismissed as simply an annoyance to etymolog Here the name itself is a disastrous barrier to good medical and good public health measures. A term that would avoid fusion and unjustified panic would help greatly in carrying the sound recommendations of the editorial "Leprosy in United States" (*J. A. M. A.* **142:**1365-1366 [April 29] 19

Leviticus 13 and 14, which discuss the leprosy of pers garments, and houses, contain no description that can be i tified as what is defined as leprosy in modern medicine. Ind the only disease that can be recognized with reasonable certai is favus of the scalp (Leviticus 13:29-37). That the Biblical w referred to a status under the ritualistic law is made evident the mention of leprosy in the long list of blemishes that wo bar even a descendant of Aaron from serving as priest (Leviti 21:16 to 22:9). This conclusion is supported in a unique in the New Testament, where diseases are spoken of as be "healed" and leprosy as being "cleansed." The single except is very illuminating. The word "healed" is used (Luke 17:11- regarding one of ten lepers. This one man was a Samaritan hence could not be regarded as "cleansed" under the rituali law.

It is probably significant that in Europe the practical disappe ance of anything diagnosed as leprosy occurred during the gr epidemic of syphilis (1493-1600). A plausible reason is that diagnosis of syphilis imposed no onerous restrictions on patient. It was not even a cause of shame or social embarra ment for fully a century, as is seen from the fact that the po that gave syphilis its present name was dedicated to a cardi of the church.

I hope that the medical profession can coin a better nam than Hansen's disease. Yet even an eponym is preferable a name that makes patients with modern "leprosy" go into hidi in order to save their families from ostracism and that make impossible for patients to secure employment even after t have had a medical discharge from the Carville Marine Hospi

Frederick C. Lendrum, M.D., Ph.D.
University of Illinois College of Medicin
1853 W. Polk St., Chicago 12.

SELF-RETAINING ELECTROCARDIOGRAPHIC ELECTRODE

To the Editor:—Recently, in The Journal (147:1042 [Nov. mention was made in an article by Welsh of a self-retai electrocardiographic electrode, which is an *ingenious* idea solves most of the problems; however, in exercise tolerance t and on extremely emaciated or hairy-chested persons, some d culty may be experienced in using the Welsh electrode. In t cases a very useful device is the simple, *homemade* electr holder that I described in *Southwestern Medicine* (32:55 [F 1951). This can be made from two strips of rubber cut from old innertube, four clothespins, and a tongue blade.

R. D. Haire Jr., M.D.
706 W. Second St., Roswell, N. Me

BUREAU OF INVESTIGATION

"PROFESSOR TORGERSON"

Physicians of German or Austrian descent who may receive inquiries from colleagues in Lower Austria concerning an advertisement of a Prof. O. Torgerson of 4047 Westminster, St. Louis 8, or elsewhere, should take notice of what appears to be a victimization of such persons.

There appeared an advertisement in the October, 1951, issue of *Wiener aerzte Zeitung*, described as "Officielles Organ der Wiener Aerztekammer," which invited Austrian physicians to become established in rural areas in the United States. They were promised yearly incomes of $15,000 to $25,000. Those who appeared interested were assured employment in American hospitals at a weekly salary of $30, for which service Torgerson proposed to charge such persons the amount of $5 a week for 40 weeks. Those who were interested were invited to write him and sign an agreement as follows:

> "I, ...
> do hereby agree to pay two hundred dollars to Prof. O. C. Torgerson (now of St. Louis, Mo., U. S. A.) for the said Prof. O. C. Torgerson's services in aiding me to get to the United States and obtaining employment for me there. But it is agreed and understood that I am only obligated for the payment of the aforesaid sum of two hundred dollars upon having employment in the U. S. A. and then only after I receive $30.00 a week or more salary from said employment in the U. S. A. Furthermore, this obligation may also be liquidated by payments of $5.00 a week if I wish."

An inquiry at the St. Louis address given above has been unsuccessful. Torgerson is not identified as a Doctor of Medicine. Just what his interest is in the matter, beyond obtaining the fees mentioned, is not clear.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

INTERNSHIPS AND RESIDENCIES

The following internship and residency training programs have been approved since the publication of the list of Approved Internships and Residencies in The Journal, Sept. 29, 1951. A number of hospitals not included in this list have recently been surveyed by representatives of the Council on Medical Education and Hospitals and have been recommended for internship or residency approval. These hospitals will be notified as soon as final action on their applications has been completed.

Information regarding the hospitals on the following list will appear in the next Internship and Residency Number of The Journal.

ADDITIONAL INTERNSHIPS APPROVED

St. Vincent's Hospital	Birmingham, Ala.
General Hospital of Riverside County	Arlington, Calif.
Athens General Hospital	Athens, Ga.
Methodist Hospital	Gary, Ind.
Mercy Hospital	Davenport, Iowa
Mercy Hospital	Iowa City, Iowa
Suburban Hospital	Bethesda, Md.
St. Louis Children's Hospital	St. Louis, Mo.
Perth Amboy General Hospital	Perth Amboy, N. J.
Park Avenue Hospital	Rochester, N. Y.
Chesapeake and Ohio Hospital	Clifton Forge, Va.
Elizabeth Buxton Hospital	Newport News, Va.

ADDITIONAL RESIDENCIES APPROVED

Allergy	
Veterans Administration Hospital	Long Beach, Calif.
Anesthesiology	
San Juan City Hospital	San Juan, Puerto Rico
Cardiovascular Disease	
Duke Hospital	Durham, N. C.
Cincinnati General Hospital	Cincinnati, Ohio
Gastroenterology	
Massachusetts Memorial Hospital	Boston, Mass.
General Practice	
Sacramento County Hospital	Sacramento, Calif.
Grady Memorial Hospital	Atlanta, Ga.
Macon Hospital	Macon, Ga.
Grant Hospital	Chicago, Ill.
Our Lady of Victory Hospital	Lackawanna, N. Y.
University Hospital	Oklahoma City, Okla.
St. Joseph's Hospital	Lancaster, Pa.
Sharon General Hospital	Sharon, Pa.
Sacred Heart Hospital	Yankton, S. D.
Kanawha Valley Hospital	Charleston, W. Va.
Internal Medicine	
Veterans Administration Hospital	Little Rock, Ark.
St. Joseph Mercy Hospital	Detroit, Mich.
St. Mary's Hospital	Duluth, Minn.
Robert B. Green Memorial Hospital	San Antonio, Texas
Obstetrics and Gynecology	
Swedish Hospital	Seattle, Wash.
Ophthalmology	
Montefiore Hospital	Pittsburgh, Pa.
Otolaryngology	
Bronx Eye and Ear Infirmary	New York, N. Y.
Pathology	
Central Maine General Hospital	Lewiston, Maine
Springfield Hospital	Springfield, Mass.
St. Mary's Hospital	Brooklyn, N. Y.
Proctology	
Veterans Administration Hospital	Los Angeles, Calif.
Pulmonary Diseases	
Woodlawn Hospital	Dallas, Texas
Surgery	
St. Vincent's Hospital[1]	Los Angeles, Calif.
St. Vincent's Hospital[2]	Bridgeport, Conn.
Florence Crittenton Hospital[1]	Detroit, Mich.
Good Samaritan Hospital[1]	Dayton, Ohio
Marymount Hospital[1]	Garfield Heights, Ohio
Thoracic Surgery	
University Hospital	Baltimore, Md.
Duke Hospital	Durham, N. C.
North Carolina Baptist Hospital	Winston-Salem, N. C.
Muirdale Sanatorium	Milwaukee, Wis.
Urology	
Veterans Administration Hospital	Des Moines, Iowa
Veterans Administration Hospital	Buffalo, N. Y.
Delaware Hospital	Wilmington, Del.
University Hospital	Baltimore, Md.
Lincoln Hospital	New York, N. Y.
Germantown Dispensary and Hospital	Philadelphia, Pa.
Wilkes-Barre Hospital	Wilkes-Barre, Pa.
St. Joseph's Infirmary	Houston, Texas

---

1. Approved by the Council as offering satisfactory training of one or two years' duration, in preparation for residency training in the surgical specialties (Approved Programs in Surgery, J. A. M. A., 142:1216 [April 15] 1950).

2. Approved for three years of training by the Council, the American Board of Surgery, and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Ophthalmology, Chicago

46:363-476 (Oct.) 1951

Bilateral Transverse Optic Neuritis: Report of Two Cases with Cortisone Therapy. V. L. Smith.—p. 363.
*Genetics of Retinoblastoma. H. F. Falls and J. V. Neel.—p. 367.
Orbital Pseudotumors. T. W. Cowan.—p. 390.
Bilateral Internal Carotid Aneurysm Involving Cavernous Sinus: Right Carotid Artery-Cavernous Sinus Fistula and Left Saccular Aneurysm. B. J. Alpers, N. S. Schlezinger and I. M. Tassman.—p. 403.
Congenital Arteriovenous (Racemose) Aneurysm of the Retina: Report of Three Cases. W. Z. Rundles Jr. and H. F. Falls.—p. 408.
Pregnenolone Therapy in Uveitis. L. Kellerman.—p. 419.
Ocular Tumors: Study of Incidence of Various Types and Their Mortality Rates. E. B. Spaeth.—p. 421.
Relief of Senile Entropion. S. A. Fox.—p. 424.
Retinopathy in Dermatomyositis. S. De Vries.—p. 432.
Divergence Paralysis and Paralysis of Near Reflex Associated with a Malnutrition Syndrome (Presumably Wernicke's Polioencephalitis). D. G. Cogan.—p. 436.
Unusual Pigmented Tumor of the Iris. F. C. Winter and A. E. Maumenee.—p. 438.
Physiologic Chemistry of the Eye: Review of Papers Published During 1950. V. E. Kinsey.—p. 441.

Genetics of Retinoblastoma.—Between 1938 and 1947, 53 cases of retinoblastoma were discovered in Michigan, an incidence of 1 case for every 20,288 live births. The family histories obtained in these and an additional 20 cases that have occurred since 1948 are consistent with the hypothesis that development of retinoblastoma depends on a single dominant gene that does not always find expression. Because of the fatal nature of retinoblastoma, the gene responsible for the condition is under strong negative selection pressure. That the condition persists at all is due to the fact that new genes responsible for the disease are produced by mutation in each generation. The rate of mutation (*m*) to this gene is calculated to be $2.3X10^{-5}$ per generation. No factors that might influence the mutation rate were found. If persons with the disease never reproduced, the frequency of the gene would stabilize at *m*. If a 100% effective treatment were developed, and if the survivors reproduced at a normal rate, the frequency of the gene would increase by *m* each generation so that in eight generations the disease would have eight times its present frequency. Since the present treatment yields only a 70% survival rate, and since some of the surviving patients, especially those with bilateral disease, seldom reproduce, it may be estimated by a formula derived by the authors that the frequency in eight generations will actually be about 1.54 times the present frequency. Formulas similar to the one used here might be used to predict the future incidence of other hereditary diseases in which treatment increases the survival rate.

Alabama State Medical Assn. Journal, Montgomery

21:81-108 (Oct.) 1951

The Juvenile Amputee. J. F. Comer.—p. 81.
Amebiasis in Northwest Alabama. H. V. Herndon.—p. 87.
Trends and Treatment in Ear, Nose, and Throat Allergy. R. M. Clements. —p. 90.
Recent Studies on Viral Encephalitides. F. M. Schabel Jr.—p. 92.

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Heart Journal, St. Louis

42:483-642 (Oct.) 1951

Estimation of Residual Volume of Blood in Right Ventricle of N and Diseased Human Hearts in Vivo. R. J. Bing, R. Heimbecker W. Falholt.—p. 483.
Studies on Mechanism of Ventricular Activity: I. Nature of P-R Inter J. A. Osborne, E. Corday, J. Fields and others.—p. 503.
Spatial Vectorcardiography: Right Bundle Branch Block. VIII. R. Lasser and A. Grishman.—p. 513.
*Blood Pressure Reduction to Selected Level by Continuous Injectio Methonium Halides (C5 and C6) and Use of Electrically Opera Syringe. F. H. Smirk.—p. 530.
Reduction of Mortality Rate in Coronary Atherosclerosis by Low Che terol-Low Salt Diet. L. M. Morrison.—p. 538.
Heart Disease of Unknown Etiology. R. R. Davies, R. J. Marvel P. D. Genovese.—p. 546.
Systemic Arterial Embolism in Rheumatic Heart Disease. R. D T. W. Mattingly, C. L. Holt and others.—p. 566.
*Sulfhemoglobinemia: Study of 62 Clinical Cases. R. O. Brandenburg H. L. Smith.—p. 582.
Effects of Cigarette Smoking on Ballistocardiogram. A. Caccese A. Schrager.—p. 589.
*Procaine Amide Compared with Quinidine as Therapy for Arrhythm A. I. Schaffer.—p. 597.
Effects of Tubing Bore on Stethoscope Efficiency. M. B. Rappaport H. B. Sprague.—p. 605.

Methonium Halides in Blood Pressure Reduction.—From initial experience with the methonium halides, pentamethoni and hexamethonium, Smirk learned that effective blood pressi reduction without important symptoms is possible in most ty of high blood pressure. With two or three subcutaneous inj tions daily the blood pressure usually falls during the hour f lowing injection, and gradually returns to its original high le during the next three or four hours. Continuous, mechanica controlled subcutaneous injections were given to hospitali patients confined to bed or a chair in order to discover whet the blood pressure could be reduced to a predetermined lev The author describes an electrically operated, syringe-emptyi device, which is designed to carry syringes of 1 to 100 cc. cap ity and to empty a syringe at a uniform rate in from 2 to hours. Fine pressure tubing conveys the drug solution from t syringe to the injection needle. The slowest injection rate is cc. and the fastest 50 cc. per hour. The intermediate rates are o tained by gears and regulation of the driving speed by a go ernor. With continuous subcutaneous injection of methoni halides the blood pressure has been held within a selected ran as long as 10 days. The method appears to afford greater cont over the blood pressure level than has seemed practicable pre ously and has been valuable in treatment of hypertensi crises.

Sulfhemoglobinemia.—While methemoglobin is a pigm found in the blood of normal persons, sulfhemoglobin an abnormal pigment not found in ordinary circumstances. has been suggested that formation of sulfhemoglobin invol the introduction of one atom of sulfur into the hemoglo molecule and a change in the linkage of globin to heme. T result of this chemical union is a nonreversible product, so t sulfhemoglobin remains intact until the erythrocytes contain it are destroyed. Sulfhemoglobin is identified by its spectr which shows a strong band at 618 mμ. The dark band of met moglobin is seen at 630 mμ. The latter band disappears a two or three drops of 5% solution of potassium cyanide h been added to the blood, and this test differentiates meth globin from sulfhemoglobin, which remains fixed. The oc rence of either pigment in abnormal amounts can be relate the presence of amino and nitro compounds. Nitrites, sulfo mides, and aniline derivatives most commonly cause me moglobinemia. Acetophenetidin and acetanilid most freque cause production of sulfhemoglobinemia, which is commo than methemoglobinemia. The records of 62 patients with sulf hemoglobinemia examined at the Mayo Clinic from May, 1930, to February, 1950, were reviewed. "Bromo-seltzer" and acetani lid had been ingested by the majority of patients, and sulfon mide and acetophenetidin alone or in combination with other drugs by the remainder. The medicaments had been used chiefly for headache or neurotic origin. A large percentage of patients who had a concentration of 2 gm. or more of sulfhemoglobin per 100 cc. of blood were constipated, but constipation was an infrequent complaint in the majority, who had less than 2 gm. of sulfhemoglobin per 100 cc. of blood. Despite severe cyanosis and very high levels of sulfhemoglobin in the blood of two patients, there was little or no evidence of respiratory distress.

Procaine Amide Therapy of Arrhythmias.—To compare the clinical efficacy of procaine amide and quinidine in treatment of auricular arrhythmias and to determine whether procaine amide is more effective in ventricular than auricular arrhythmias, Schaffer tested these two drugs quantitatively in two patients with ventricular and one patient with auricular arrhythmias. The results indicate that quinidine is approximately four times as potent as procaine amide on a weight basis; for every 0.065 gm. of quinidine needed for a given therapeutic effect, approximately 0.25 gm. of procaine amide can be substituted. Procaine amide is no more effective in ventricular than in auricular arrhythmias. The oral use of procaine amide is limited by its tendency to cause nausea and vomiting and by the large number of capsules required for an average effective dose, but procaine amide can be substituted in patients who are sensitive to quinidine. Furthermore, procaine amide appears to be superior to quinidine for intravenous administration.

American Journal of Obstetrics & Gynecology, St. Louis

62:477-708 (Sept.) 1951. Partial Index

*Observations on Pathology and Spread of Endometriosis Based on Theory of Benign Metastasis. C. T. Javert.—p. 477.
Certain Concepts in Handling of Breech and Transverse Presentations in Late Pregnancy. C. S. Stevenson.—p. 488.
Study of Management of Prolonged Labor. A. F. Daro and H. A. Gollin. —p. 516.
Vaginal Hysterectomy, Treatment of Choice for Benign Enlargements of Uterus. H. M. Brill and M. Golden.—p. 528.
Pregnancy Complicated by Subarachnoid Hemorrhage. J. Schwartz.—p. 539.
Abortions—Study Based on 1,304 Cases. J. H. Collins.—p. 548.
Pain and Pain Relief in Essential Dysmenorrhea. F. Schuck.—p. 559.
Tubal Sterilization: Review of 1,169 Cases. J. G. Lee Jr., J. H. Randall and W. C. Keettel.—p. 568.
Puerperal Hysterectomy. R. A. Cosgrove.—p. 584.
Analysis of 45 Face Presentations. A. C. Posner and S. Cohn.—p. 592.
Criteria of Inlet Contraction. What Is Their Value? D. F. Kaltreider. —p. 600.
Buccal Androgen Alone and with Estrogen in Tension and Anxiety. G. T. Newman.—p. 607.
Preclinical Recognition of Toxemia of Pregnancy. H. M. Brill, M. J. Golden, H. L. Woolf and others.—p. 614.
The Eye Grounds During Toxemia of Pregnancy. A. J. Magee.—p. 621.
Postural Shock in Pregnancy. W. A. McRoberts Jr.—p. 627.
Double Sac with Secondary Rupture of the Bag of Waters During Labor: Clinical Entity, and Its Explanation from Examination of Membranes. W. Schuman.—p. 633.
Cerebral Venous Thrombosis in the Puerperium: Report of Two Cases with Necropsy Findings. R. L. Burt, J. F. Donnelly and D. L. Whitener.—p. 639.
Effect of Amputation of Cervix Uteri upon Subsequent Parturition: Preliminary Report of Seven Cases. J. J. Fisher.—p. 644.

Endometriosis and the Theory of Benign Metastasis.—Endometriosis is a disease of nulliparas or women who have borne few children and occurs during the childbearing period of life. A diagnosis of endometriosis or adenomyosis was made at a woman's clinic in 1,371 of 24,436 patients, an incidence of 5.61% or 1 in 18 patients. On the basis of these cases Javert formulates his concept of endometriosis on the principles of cyclical homeoplasia and benign metastasis. The sequence of the proliferative, secretory, and menstrual phases of the functioning endometrium has been called cyclical homeoplasia. Javert shows that benign endometrium may spread (1) by direct invasion of the myometrium (adenomyosis) and of the endosalpinx, (2) by exfoliation of cells through the fallopian tubes with implantation on the ovaries and peritoneum, (3) by metastasis to lymph nodes, and (4) by hematogenous metastasis locally and to distant organs such as the kidney. Endometriosis spreads by the same channels as endometrial carcinoma. The author stresses that the apparent increase in endometriosis in recent years coincides with a tendency toward smaller families, widespread use of contraceptives, fewer cervical dilatation and uterine suspension operations, and commoner use of intravaginal tampons during menstruation. Age, hormone balance, cervical stenosis, retroversion, use of intravaginal tampons, sterility, pelvic surgery, radiation, and use of testosterone are factors in the pathogenesis of endometriosis. Young patients may require treatment by dilatation and curettage, excision of pelvic lesions and adhesions, and uterine suspension, after which they are urged to conceive at once. Pregnancy is the best prophylactic and curative treatment of endometriosis, since it interrupts the cyclical homeoplasia. In young women the reproductive organs should be preserved as much as possible; in older women total hysterectomy and bilateral salpingo-oophorectomy may become the procedure of choice, rather than castration by irradiation, which has been observed to stimulate development of adenocarcinoma in the endometrium in several patients. Endometrial carcinoma occurs more frequently in patients with endometriosis.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

35:405-502 (Sept.) 1951

Production of Herxheimer Reactions by Injection of Immune Serum in Rabbits with Experimental Syphilis. W. H. Sheldon, A. Heyman and L. D. Evans.—p. 405.
Production of Herxheimer-Like Reactions in Rabbits with Spirillum Minus Infections by Administration of Penicillin or Immune Serum. W. H. Sheldon, A. Heyman and L. D. Evans.—p. 411.
Endocrine Studies of Patients with Syphilitic Interstitial Keratitis. J. V. Klauder, B. A. Gross and H. A. Hanno.—p. 416.
*Treatment of Neurosyphilis with Penicillin and with Penicillin plus Malaria. R. D. Hahn.—p. 433.
Study of Cases of Penicillin-Treated Early Syphilis with Pretreatment Cerebrospinal Fluid Abnormalities. R. V. Rider.—p. 471.
Results of Treatment of Early Syphilis with Single Injection of Procaine Penicillin G in Oil and Aluminum Monostearate. E. W. Thomas, C. R. Rein, S. Landy and D. K. Kitchen.—p. 475.
Terramycin in Treatment of Syphilis: Report of 5 Cases. H. M. Robinson and H. M. Robinson Jr.—p. 479.
Terramycin in Treatment of Chancroid, Lymphogranuloma Venereum, and Granuloma Inguinale. M. L. Niedelman, H. E. Pierce Jr., L. D. Hoffstein and W. V. Matteucci.—p. 482.
Aureomycin in Treatment of Gonorrhea in Male: Further Observations. R. C. V. Robinson and W. P. Galen.—p. 488.
Oral Terramycin in Rapid Treatment of Gonorrhea and Other Venereal Diseases. L. T. Wright, A. Prigot, J. C. DiLorenzo and others.—p. 490.

Treatment of Neurosyphilis.—A study based on an analysis of 589 patients with neurosyphilis, of whom 479 were treated initially with penicillin alone and 110 with penicillin plus malaria, revealed the following facts: 1. Penicillin rendered the spinal fluid inactive in all forms of neurosyphilis. Results tend to improve with passage of time, and relapse is infrequent. Penicillin alone is used in the retreatment for spinal fluid failure, since the addition of malaria therapy offers no advantages. 2. Penicillin alone almost completely prevents the development of new physical signs of neurosyphilis but has only a partial or no ameliorating effect on those physical signs already present. 3. Increment in body weight is almost identical after both treatment methods. 4. Penicillin alone is the treatment of choice in asymptomatic neurosyphilis, syphilitic meningitis, and neurosyphilis manifested solely or predominantly by pupillary changes. 5. Penicillin plus malaria remains the treatment of choice in the treatment of syphilitic primary optic atrophy. 6. Neither penicillin alone nor penicillin plus malaria therapy can be fully evaluated with respect to eighth nerve deafness. 7. Herxheimer reactions are relatively frequent after penicillin therapy, but clinically deleterious effects are to be feared only in paresis and taboparesis. 8. In syphilis of the spinal cord exclusive of tabes dorsalis treatment by either of the two methods is relatively ineffective. 9. Penicillin alone is effective in paresis and the paretic component of taboparesis, but the addition of malaria therapy may afford slight additional benefit. The results of treatment improved with time. Severity of paretic symptoms, type of psychosis, and work ability before treatment affect the clinical outcome. 10. In tabes dorsalis penicillin alone effects the disappearance of mild to moderate tabetic symptoms in approximately one-third of the patients. Severe symptoms do not disappear completely. The effects of penicillin plus malaria therapy are essentially the same as those of penicillin alone in tabetic symptoms. 11. No conclusions can be drawn as to the effect of penicillin dosage. Optimum duration of treatment is nine or more days.

American Surgeon, Atlanta, Ga.

17:893-990 (Oct.) 1951

Evaluation of Protein-Bound Iodine Determination in Thyroid Disease. T. C. Davison and A. H. Letton.—p. 893.
Surgical Correction of Congenital Eventration of Diaphragm. J. G. Shellito and W. C. Bartlett.—p. 898.
*Supraduodenal and Transduodenal Exploration of Common Bile Duct. M. B. Welborn.—p. 901.
Common Benign Breast Lesions. C. C. Sparks.—p. 909.
Vertebral Osteochondroma. H. C. Ilgenfritz.—p. 917.
Continuous Lumbar Sympathetic Block. D. B. Corcoran.—p. 923.
Fibrosarcoma of Ileum: Two Case Reports. H. Mahaffey.—p. 934.
Omphalocele: Analysis of 21 Cases from Charity Hospital of Louisiana at New Orleans. H. R. Kahle.—p. 947.
Serum Cholinesterase Levels in Surgical Patients: Preliminary Report. H. E. Snyder, C. D. Snyder and L. D. Bunch.—p. 959.
Wrinkle-Free Stockinette for Use Under Casts. W. B. Fischer and L. W. Breck.—p. 981.

Exploration of Common Bile Duct.—Welborn believes that combined transduodenal and supraduodenal exploration of the ommon duct is indicated (1) when choledochotomy is being carried out, stones have been found, and it is doubtful whether the ampullary and pancreatic portions of the duct have been completely cleared of stones; (2) when the surgeon suspects that there is a stricture about the ampulla of Vater; (3) during resection of a duodenal diverticulum when the relationship of the papilla to the diverticulum must be definitely established; (4) during resection for duodenal ulcer, when the surgeon fears that the patency of the papilla may be compromised by inversion of the duodenal stump; and (5) in cases of tumor of the ampulla of Vater, the adjacent area of the duodenum, or the head of the pancreas. Certain maneuvers of the technique are described and illustrated. The postoperative care is briefly described and four case histories are presented. The author feels that this method has not been employed oftener in the past because of fear of peritonitis or of development of a fistula following opening of the duodenum, but these complications can be avoided. When stones are present in the duct and there is doubt as to whether or not those in the pancreatic portion have been removed, the surgeon should mobilize the duodenum and open it in order to establish the complete patency of the duct system. This procedure should be performed with the primary operation because at a second operation the normal anatomical landmarks may be distorted by adhesions and the procedure made difficult and hazardous by vascular, friable adhesions. This operation must not be performed unless the surgeon is able to mobilize the duodenum widely to permit adequate exposure for exploration and subsequent closure.

Angiology, Baltimore

2:311-424 (Oct.) 1951

Communications Between Carotid Artery and Cavernous Sinus: Clinical and Critical Study of Their Complications and Treatment. E. Holman, F. Gerbode and V. Richards.—p. 311.
Studies in Experimental Frostbite: VIII. Treatment with ACTH. R. E. Lempke and H. B. Shumacker Jr.—p. 340.
*Treatment of Cold Feet and Legs After Poliomyelitis. K. Stenport. —p. 345.
Dynamic Phlebography. J. A. Ferreira, E. J. F. Villamil and A. O. Ciruzzi.—p. 350.
Post Mortem Arteriography in "Normal" Lower Limbs. C. F. Ross and K. D. Keele.—p. 374.
Tumorigenic Lymphedema. F. Martorell.—p. 386.
Post Phlebitis Syndrome: Method of Treatment. B. Seligman.—p. 393.
Evaluation of Inositol in Treatment of Arteriosclerosis Obliterans. R. J. Popkin.—p. 398.
Muscle Adenylic Acid: Clinical Study of Its Effect. E. D. Lawrence, D. Doktor and J. Sall.—p. 405.
Hemodynamic Changes in Small Vessels in Man as Analyzed by Digital Plethysmography. R. L. Johnson, E. D. Freis and H. W. Schnaper. —p. 412.

Cold Legs and Feet Following Poliomyelitis.—Coldness of the legs and feet has been troublesome for some patients who have had poliomyelitis. This symptom has not received much attention, because it has been overshadowed by paralysis. At the Institute for Cripples in Helsingborg 224 patients with paralysis of the lower extremities were studied for subjective and objective manifestations of coldness. In 93 the symptom was so slight that no treatment was indicated. Usually the patients least affected by paresis had the least symptoms of coldness, but occasionally a patient with slight paresis had relatively intense feelings of cold and vice versa. In the severest cases the coldness was f up as far as the groin. The color of the cold skin differed wh the patient was recumbent and standing. In the morning, wh the feet were warm, a pink tinge was often seen while towa evening the color deepened progressively to bluish violet. (going to bed, the feet were often very cold, even during the war season. Warming up required a long time and was accompani by a burning pain. Since this coldness in the legs was simil to that observed in other vasospastic conditions such as Buerge disease, lumbosciatic disorders, frostbite, or Raynaud's disea it was decided to treat it by measures directed toward the sy pathetic nervous system. First a vasodilating drug was given mouth in tablet form. In some patients the therapeutic resu (cessation of cold feeling and of muscular pain) stopped wh medication was interrupted, but in others the effect persist In some cases in which the condition had existed for a lo time, the vasodilating drug was ineffective. Later the auth employed blockage of the second and third lumbar ganglic and finally resection of these ganglions, and the skin temperatu increased as much as 7 C.

Annals of Surgery, Philadelphia

134:529-784 (Oct.) 1951. **Partial Index**

Treatment of Oral Cancer by Combination of Radiotherapy and Surg H. Wookey, C. Ash, W. K. Welsh and R. A. Mustard.—p. 529.
Regeneration of Human Thyroid After So-Called Total Thyroidecto J. V. Goode, A. Grollman and A. F. Reid.—p. 541.
Radioiodine (I^{131}) Tracer Studies After Total Thyroidectomy. D. Szilagyi, R. D. McClure, T. H. Connell Jr. and others.—p. 546.
Treatment of Burned Wound Based on Experience of 1000 Hosp Patients. H. S. Allen.—p. 566.
*Approach to Problem of Burn Sepsis with Use of Open-Air Thera T. G. Blocker Jr., V. Blocker, S. R. Lewis and C. C. Snyder.—p.
Enzymatic Debridement of Burns. W. A. Altemeier, R. Coith, W. (bertson and A. Tytell.—p. 581.
Stress Response in Severely Burned: Interim Report. E. I. Evans W. J. H. Butterfield.—p. 588.
Renal Function Studies of Severely Burned Patients: Preliminary Rep B. W. Haynes Jr., M. E. DeBakey and F. R. Denman.—p. 617.
Etiologic Factors in Postoperative Salt Retention and Its Preventi J. M. Winfield, C. L. Fox Jr. and W. L. Mersheimer.—p. 626.
Prevention and Treatment of Atelectasis by Control of Bronchial Sec tions. J. M. Baker, L. C. Roettig and G. M. Curtis.—p. 641.
Clinical Significance of Respiratory Acidosis During Operations. H. Maier, G. W. Rich and S. Eichen.—p. 653.
*Experiences with Streptokinase and Streptodornase. G. C. Adie W. G. Childress.—p. 659.
Surgical Treatment of Ventricular Fibrillation. J. Johnson and C. Kirby.—p. 672.
Surgical Treatment of Transposition of Pulmonary Veins. W. H. M Jr.—p. 683.
*Surgery of Mitral Stenosis: III. Finger-Fracture Valvuloplasty. D. Harken, L. Dexter, L. B. Ellis and others.—p. 722.
Resection of Descending Thoracic Aorta for Aneurysm: Report of U of Homograft in Case and Experimental Study. C. R. Lam and H. Aram.—p. 743.
Treatment of Certain Aortic Coarctations by Homologous Grafts: Rep of 19 Cases. R. E. Gross.—p. 753.
Viability of Long Blood Vessel Grafts. W. S. McCune and B. Bla —p. 769.

Burn Sepsis with Open-Air Therapy.—From January, 19 to March, 1951, 104 acute and subacute burn patients w treated by the open-air technique and 103 patients with simi burns were treated with occlusive dressings. The regimen e ployed in the open-air therapy is as follows: On admission cl ting is removed and gross dirt is washed off with detergents a large quantities of warm isotonic sodium chloride solution. T patient is then placed on sterile sheets with the burned ar completely exposed to the air. No heat cradle is employed a no medicament is applied locally. Affected extremities are vated, using mechanical devices if necessary. With severe bu of the hands pressure dressings are still advocated for the 48 hours for immobilization in the position of function; then hands are exposed also. Unburned parts of the body may covered with bedclothes. Within 48 to 72 hours the raw surfa are covered by a thin dry crust; when it is completely form the patient has no pain on pressure over the area. From the fi general therapy of the patient has priority over local measu The usual sedatives are given for control of pain and oxy is administered if indicated. Whole blood is the replacem fluid of choice from the time of injury, and it is usually i cated until the patient has recovered from shock and hematocrit level drops below 50. Crusts are inspected daily. N second degree burns are usually healed completely between the 8th and 16th day and the crusts fall off spontaneously. At this time it is possible to distinguish between deep second and third degree burns by the appearance of the overlying crust. With third degree burns the crust is adherent and contracted below the level of the surrounding tissue, whereas in a partial-thickness burn it is raised above the normal skin surface. When the crusts fall off is the optimum time for excision of slough from the underlying fatty subcutaneous tissue and skin grafting in full-thickness burns. Clinical evidence suggests that a dry crust overlying an area of partial or complete skin loss forms a mechanical barrier against pathogenic organisms that require warmth and moisture for growth; it exerts a benign influence until healing has occurred or until a local infectious process undermines the burn crust from the edges, indicating that surgical intervention is needed. Although use of the exposure method did not improve the mortality rate of severely burned patients, a striking change in the length and degree of morbidity was noted, particularly in patients with burns covering more than 30% of the body surface. With open-air therapy patients required considerably less whole blood than with occlusive dressings. In the group of patients treated by open-air exposure the average time of hospitalization was 21 days for minor burns and 42 days for major burns, while in the group of patients treated with occlusive dressings the average lengths of hospitalization were 33 and 87 days, respectively. The exposure treatment is effective, provides relief from pain, is useful for nearly all types of burns, is usable by both first-aid workers and professional personnel, is not expensive, and does not predetermine subsequent treatment. It is particularly applicable to flash-burns involving only one surface of the body, the type of burn that would be expected in typical atomic bomb casualties.

Streptokinase and Streptodornase.—Nineteen patients with various conditions were treated with streptokinase and streptodornase. The enzymes used were derived from the Lancefield Group C, H46A strain of Streptococcus, which is nonpathogenic for man. The substrate was not satisfactory for the enzymatic reaction in five of the patients, who had actinomycosis, large bilateral gluteal fistulas, tuberculous empyema of two years' duration, pleural effusion with incisional sinuses following lobectomy, and tuberculous meningitis, respectively. Six patients who were definitely benefited by treatment had subphrenic abscess, pulmonary abscess, large pararectal abscess, infection of lesser sac of peritoneum following perforation of cardia from esophagoscopy, infected hemopneumothorax after lobectomy, and infected subcapsular space after thoracoplasty, respectively. Of the remaining eight patients in whom the results of treatment were definitely beneficial, two had empyema after lobectomy, and the other six had hemothorax after thoracoplasty, infected hemothorax after thoracoplasty, infected abdominal wound after laparotomy, subcutaneous tuberculous sinus in chest wall incision, infected hemothorax after stab wound, and tuberculous pleural effusion, respectively. Though the number of patients treated is small, the following generalizations may be made: When the enzymes are introduced into closed spaces, in most cases there is a generalized reaction, with elevation of temperature and malaise that lasts for several hours and subsides quickly. The patient must be observed closely during the period of enzyme action; effective means must be employed for placing the enzymes in intimate contact with the substrate and at the same time providing for adequate release of the increased fluid accumulation. The addition of antibiotics to the enzyme solution will aid in reducing the infection in purulent processes and prevent contamination in noninfected collections of blood. In early hemothorax, if proper treatment is instituted, the effect exerted by the enzymes is rapid and final. In most purulent exudates the thick pus is liquefied so that aspiration or drainage is improved.

Blunt Dissection Valvuloplasty for Mitral Stenosis.—The efficacy of several surgical procedures for treatment of mitral stenosis was compared in 86 patients with this disease. Valvulotome valvuloplasty was performed in 9, "finger-fracture" valvuloplasty in 71, reservoir-shunt operation in 2, denervation of the heart in 2, and creation of interauricular septal defect in 2. Both clinical and laboratory results indicated that finger-fracture valvuloplasty is far superior to the other procedures. In this technique the fused mitral leaflets are separated at the commissures by gentle blunt dissection with the gloved finger rather than by incision with the valvulotome. This is the technique of choice in what the author calls Type 1 mitral stenosis, but is not applicable to Type 2 stenosis. In Type 1 stenosis bridges of fusion between the major and minor mitral leaflets form a rigid marginal zone that is continuous with a similar rigid zone around the lips of the stenotic orifice. The chordae tendinae and papillary muscles are essentially normal. In Type 2 stenosis there is uniform fusion of the leaflets, forming an elastic funnel, with extension of the process to the chordae tendinae, which are shortened, thickened, and fused, and may even form a secondary stenotic orifice. Blunt dissection with the finger will fracture the fusion bridges across the commissures in Type 1, but incision with the valvulotome is necessary in Type 2. Type 1 stenosis was present in over 85% of the authors' patients. All of the 71 patients treated by finger-fracture valvuloplasty were partially or completely disabled by their mitral stenosis preoperatively. Among the 37 who were partially disabled because of exertional dyspnea and frequent attacks of hemoptysis, chest pain, and pulmonary edema, only 1 died. Of the remaining 34 who were completely disabled, usually with right ventricular failure, 17 died as a result of the operation.

California Medicine, San Francisco

75:261-320 (Oct.) 1951

Specialist-General Practitioner Cooperation in Obstetrical Department. B. H. Watson.—p. 261.
Treatment of Metastatic Breast Cancer in Bone. M. A. Sisson and L. H. Garland.—p. 265.
Diagnosis of Hemolytic Anemias. E. R. Evans.—p. 271.
Fistulas Following Gastrectomy. R. B. Henley and H. G. Bell.—p. 276.
Use of Free Grafts in Correction of Recurrent Pterygia, Pseudopterygia and Symblepharon. D. C. Hartman.—p. 279.
Apoplexy in Young Adults—Diagnostic and Therapeutic Observations. E. Boldrey.—p. 281.
*Surgical Treatment of Mitral Stenosis. W. H. Muller Jr.—p. 285.
Diphtheria: Present-Day Problem. H. Brainerd and H. B. Bruyn.—p. 290.
Treatment of Closed Head Injuries. L. B. Lawrence.—p. 296.
Dermatitis of Hands in Industry. N. N. Epstein and J. R. Allen.—p. 300.

Surgical Treatment of Mitral Stenosis.—Mitral commissurotomy was performed on 25 patients with mitral stenosis; 14 were over 35 and the oldest was 51. The author used Bailey's technique, which consists of introduction of the right index finger and an especially designed valvulotome through the left auricular appendage into the left auricle and division of the mitral valve commissures, but he employed a different instrument. His valvulatome has a hook on either side so that the median commissure can be divided without pronating the hand. The instrument is curved transversely as well as longitudinally to fit the contour of the transverse curve of the finger, so that a second glove, which was used to attach the Bailey knife to the index finger is not needed. A maintenance dose of digitalis and doses of quinidine sulfate up to about 0.4 gm. every three to four hours were administered before the operation. All the patients had had symptoms of rheumatic heart disease for from 6 months to 20 years, and many had far advanced symptoms of pulmonary hypertension with pulmonary edema and hemoptysis. Five had auricular fibrillation before operation. Six had had peripheral emboli, and two had residual hemiplegia. Four of the patients died, one of a pulmonary embolus three weeks after the surgical intervention, the second of cardiac arrest during the operation after moderate hemorrhage due to a tear in the wall of the auricle, the third from rapidly progressive heart failure on the fourth postoperative day, and the fourth 18 hours after the operation. Of the 21 patients who survived the operation, all appear to be somewhat improved. Congestive failure occurred during the first two weeks in six patients, and in three it was precipitated by a respiratory infection. An increase in the dose of digitalis and the administration of mercurial diuretics relieved the cardiac decompensation in all but one patient. Pulmonary edema and hemoptysis did not recur in the surviving patients. Exertional dyspnea was diminished and exercise tolerance increased in most cases. It is still too early to predict the final outcome, but [illegible] ars to be f[illegible]able. The results already obtained enc[illegible] continu[illegible] of mitral commissurotomy in patients [illegible] al steno[illegible] ve advanced pulmonary hyperten[illegible]

Cancer, New York

4:907-1158 (Sept.) 1951. Partial Index

Carcinosarcoma of Lung: Review of Literature and Report of Two Cases Treated by Pneumonectomy. M. Bergmann, L. V. Ackerman and R. L. Kemler.—p. 919.
Unusual Leukocyte Responses in Primary Carcinoma of Lung. R. J. Fahey.—p. 930.
Pathological Effects and Radioautographic Localization of I^{131} in Humans: Postmortem Study in Nine Patients. J. T. Godwin, B. J. Duffy Jr., P. J. Fitzgerald and others.—p. 936.
Hürthle-Cell Cancer of Thyroid: Review of 40 Cases. E. L. Frazell and B. J. Duffy Jr.—p. 952.
*More Thorough Operation for Gastric Cancer: Anatomical Basis and Description of Technique. G. McNeer, D. A. Sunderland, G. McInnes and others.—p. 957.
Comparative Study of Serum Glycoproteins in Patients with Parenchymatous Hepatic Disease or Metastatic Neoplasia. E. M. Greenspan, I. Lehman, M. M. Graff and E. B. Schoenbach.—p. 972.
ACTH and Cortisone in Advanced Carcinoma of Digestive Tract. R. W. Postlethwait, V. Moseley, K. T. McKee and others.—p. 984.
Primary Lymphosarcoma of Appendix. R. G. Clarke and J. P. Simonds. —p. 994.
Radioactive Phosphorus: II. In Treatment of Myeloid Leukemia. H. D. Diamond and L. F. Craver.—p. 999.
Metabolism of Leukocytes Taken from Peripheral Blood of Leukemic Patients. R. M. Bird, J. A. Clements and L. M. Becker.—p. 1009.
Heterologous Transplantation of Human Neoplasms Including Lymphomas. S. B. Andrus, G. F. Meissner and C. M. Whorton.—p. 1015.
Heterophile Antibodies and Antigens in Neoplastic Diseases. C. M. Southam, Y. Goldsmith and J. H. Burchenal.—p. 1036.
Desmomas of Abdominal Wall in Children. R. J. Booher and G. T. Pack.—p. 1052.
Pathology and Treatment of Adenocarcinoma of Cervix. S. B. Gusberg and J. A. Corscaden.—p. 1066.
Evaluation of Bilateral Orchiectomy in Treatment of Carcinoma of Prostate. I. C. Rusche.—p. 1087.
Extraskeletal Osteogenic Sarcoma Arising in Irradiated Tissue. O. Auerbach, M. Friedman, L. Weiss and H. I. Amory.—p. 1095.
Osteogenic Sarcoma Following Prophylactic Roentgen-Ray Therapy: Report of Case. S. Spitz and N. L. Higinbotham.—p. 1107.

Operation for Gastric Cancer.—McNeer and associates investigated the following aspects of surgery for gastric cancer: (1) results when the stomach is resected in continuity with adjacent organs; (2) resectability of recurrent gastric cancers; (3) progress in technique of total gastrectomy; (4) effectiveness of subtotal gastrectomy; and (5) sites of regional lymph node metastases. This paper is mainly a preliminary report on methods used in ascertaining the sites of regional lymph node metastases and the results obtained in 15 surgical interventions. The authors also describe a technique of radical total gastrectomy, partial pancreatectomy, and splenectomy that they recommend as an approximation to the ideal of an en bloc resection of gastric cancer. They feel that the preliminary results of their anatomic study justify the magnitude of the surgical techniques. One of the chief advantages of the described approach is that it permits mobilization and rotation of the pancreas, with clear exposure of the splenic vessels at their origin. It is certain that gastric cancers metastasize early to the pancreaticolienal nodes oftener than was previously suspected. It is equally certain that metastatic nodes cannot be reliably identified by palpation. Therefore the authors believe that the spleen and the left portion of the pancreas should be removed in cancers of the proximal and midgastric segments. It would seem logical also to remove the transverse mesocolon and colon for cancers of the greater curvature in which the mesocolon is involved. The authors have no information concerning the extent of lymph node metastases about the head of the pancreas when operable cancers are situated in the distal gastric segment, but they do not believe that resection of the head of the pancreas combined with gastrectomy would be justifiable. Later developments may modify their views.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

4:1-214 (Oct.) 1951

Diagnosis and Treatment of Vaginitis. S. Abel.—p. 34.
*Treatment of Clubfoot. G. M. Hart.—p. 41.
Managing the Comatose Patient. R. Meyers and M. E. Meyers.—p. 45.
Acute Abdominal Emergencies. M. A. Casberg.—p. 53.
How to Treat Parkinsonism. A. S. Effron.—p. 61.
Management of Parenteral Fluid Therapy. S. Freeman.—p. 64.

Treatment of Clubfoot.—Hart shows that clubfoot may be treated by the general practitioner with wedging casts followed by application of a Denis Browne splint. The deformity should be evaluated a few days after birth and evidence of congenital dislocation of the hip should be searched for, because this condition is occasionally associated with clubfoot. It should be suggested to the mother that the first cast be applied when the child is between 1 and 2 months old. Treatment is then carried out in the office at weekly intervals with wedging casts until the deformity is fully corrected, usually by the time the child is about 7 or 8 months old. A Denis Browne splint is then fastened to a pair of firm-soled baby shoes that are worn on the opposite feet. The splint is worn until the child is about 1 year old and is ready to stand and walk. It is then necessary that clubfoot shoes be worn during the daytime and the splint at night. When the splint is no longer used, the mother is taught stretching exercises to carry the forefoot into abduction and the hindfoot into dorsiflexion. These are carried out several times a day for 10 to 15 minutes at a time and should be continued until the child is several years of age or until the foot remains in satisfactory position. If at any time the deformity recurs, the foot should be placed again in a cast, and further wedging carried out, followed by a period of retention. The deformity is completely corrected in 90% of patients with clubfoot treated by conservative measures. Approximately 10% subsequently require some type of surgical operation.

Iowa State Medical Society Journal, Des Moines

41:413-446 (Oct.) 1951

Diagnosis and Management of Chronic Peripheral Arterial Insufficiency. H. N. Neu and W. J. Reedy.—p. 413.
Use and Misuse of Hepatic Function Tests. M. Franklin.—p. 416.
Some Observations of Management of Patients with Stroke. J. T. Bakody. —p. 419.
*Malaria in Korean Veterans. J. E. Kelsey and D. E. Derauf.—p. 423.

Malaria in Korean Veterans.—This paper reviews observations on 19 patients with malaria in whom the disease was diagnosed and treated at the Veterans Administration Hospital in Des Moines, Iowa. All the men had contracted malaria in Korea. Ten of the 19 patients were admitted to the hospital without having first consulted private physicians. A diagnosis of malaria was made in three of the nine patients who first consulted private physicians. Of the six undiagnosed cases, three received penicillin, one penicillin and sulfonamide drugs, and one had two "manipulations." The average period of time from the date of departure from the malaria zone to the onset of symptoms was 31 days, with a range of from 14 days to 7½ months. All patients had a positive blood smear for Plasmodium vivax and one case had a coexisting Plasmodium malaria infection. The majority of the patients had evidence of malarial hepatitis. A large percentage had coexisting helminthic infestation. Each patient was given an initial dose of 1.0 gm. chloroquine phosphate followed by 0.5 gm. daily for four days. There were no symptoms of toxicity to the drug. All cases were treated with bed rest until the chloroquine was given. Patients with hepatitis were placed on a high-protein, high-caloric diet with supplementary vitamins and kept at bed rest until liver function tests showed improvement. Helminthic infestations were treated when diagnosed. As the result of the Korean conflict, malaria is again being seen in nonendemic regions in America. Physicians should be familiar with the disease and the most modern therapeutic measures.

Journal of Bacteriology, Baltimore

62:355-518 (Oct.) 1951. Partial Index

Bacterial Oxidation of Tryptophan: I. General Survey of Pathways. R. Y. Stanier, O. Hayaishi and M. Tsuchida.—p. 355.
Studies of Rabies Street Virus in Syrian Hamster. R. L. Reagan, H. Lineweaver, D. M. Schenck and A. L. Brueckner.—p. 391.
Studies of Action of Streptococci on Blood with Their Application to Metabolism and Variation of Streptococci. W. R. Stinebring and H. Morton.—p. 395.
Production of Hyaluronidase by Lancefield's Group B Streptococci. T. Gochnauer and J. B. Wilson.—p. 405.
Rapid Plate Method of Counting Spores of Clostridium Botulinum. A. Andersen.—p. 425.
Effects of Design upon Error of Microbiological Assay for Vitamin K. A. Brownlee and D. N. Lapedes.—p. 433.
Evidence Suggesting that Granules of Mycobacteria Are Mitochondria. S. Mudd, L. C. Winterscheid, E. D. DeLamater and H. J. Henderson. —p. 459.
Photobiological Studies on Escherichia Coli at Low Temperatures. Heinmets and W. W. Taylor Jr.—p. 477.

Journal of Clinical Investigation, Cincinnati

30:897-1032 (Sept.) 1951. **Partial Index**

Effect of Intravenous Administration of Dextran on Cardiac Output and Other Circulatory Dynamics. A. C. Witham, J. W. Fleming and W. L. Bloom.—p. 897.
Comparative Prothrombic Activity of Human and Dog Blood. A. J. Quick and C. V. Hussey.—p. 903.
Effect of Chronic Administration of Adrenal Medullary Hormones to Man on Adrenocortical Function and Renal Excretion of Electrolytes. L. E. Duncan Jr., D. H. Solomon, M. P. Nichols and E. Rosenberg. —p. 908.
.Effect of High Spinal Anesthesia on Renal Hemodynamics and Excretion of Electrolytes During Osmotic Diuresis in Hydropenic Normal Pregnant Woman. N. S. Assali, S. A. Kaplan, S. J. Fomon and others. —p. 916.
Evaluation of Neurogenic Control of Blood Pressure in Hypertension with Tetraethylammonium Chloride and Spinal Anesthesia. A. A. Brust, M. F. Reiser and E. B. Ferris Jr.—p. 925.
Studies of Coronary Disease in Experimental Animal: II. Polarographic Determinations of Local Oxygen Availability in Dog's Left Ventricle During Coronary Occlusion and Pure Oxygen Breathing. J. J. Sayen, W. F. Sheldon, O. Horwitz and others.—p. 932.
Primary and Secondary Leucocyte Changes Following Intramuscular Injection of Epinephrine Hydrochloride. A. J. Samuels.—p. 941.
Effect of Intravenous Infusion of Thromboplastin on "Heparin Tolerance." R. C. Hartmann, C. L. Conley and J. R. Krevans.—p. 948.
Anoxia and Human Pulmonary Vascular Resistance. R. N. Westcott, N. O. Fowler, R. C. Scott and others.—p. 957.
Motion of Thorax During Heart Cycle: Comparison of Longitudinal, Lateral and Dorsoventral Ballistocardiograms. J. L. Brandt, A. Caccese, W. Dock and A. Schrager.—p. 971.
Introduction to Experimental and Clinical Studies of Carboxylic Cation Exchange Resins. T. S. Danowski, L. Greenman, J. H. Peters and F. M. Mateer.—p. 979.
Acidifying and Non-Acidifying Carboxylic Resin Mixtures Used Alone and with ACTH or Cortisone. J. H. Peters, T. S. Danowski, L. Greenman and others.—p. 1009.
Sodium Restriction and Cation Exchange Resin Therapy in Nephrotic Children. F. M. Mateer, L. H. Erhard, M. Price and others.—p. 1018.

30:1041-1156 (Oct.) 1951

Effect of Hemoglobin on Renal Function in the Human. J. H. Miller and R. K. McDonald.—p. 1033.
Human Glomerular Permeability and Tubular Recovery Values for Hemoglobin. R. K. McDonald, J. H. Miller and E. B. Roach.—p. 1041.
Effect of Khellin on Cardio-Pulmonary Function in Chronic Pulmonary Disease. E. N. Silber, G. L. Snider, H. Goldberg and others.—p. 1046.
Effects of Exogenous and Endogenous Posterior Pituitary Antidiuretic Hormone on Water and Electrolyte Excretion. R. J. F. Murphy and E. A. Stead Jr.—p. 1055.
Artificial Kidney Function: Kinetics of Hemodialysis. A. V. Wolf, D. G. Remp, J. E. Kiley and G. D. Currie.—p. 1062.
Study of Serum Proteins and Lipids with Aid of Quantity Ultracentrifuge: I. Procedure and Principal Features of Centrifugate of Untreated Normal Serum as Determined by Quantitative Analysis of Samples from 10 Levels. R. H. Turner, J. R. Snavely, W. H. Goldwater and others. —p. 1071.
Evidence Suggesting Renal Tubular Excretion of Potassium in Man During Recovery from Acute Renal Insufficiency. J. H. Sirota and I. G. Kroop.—p. 1082.
*Electrolyte Equilibrium During Mercurial Diuresis. W. B. Schwartz and W. M. Wallace.—p. 1089.
Potentiation of Diuretic Action of Mercuhydrin by Ammonium Chloride. J. G. Hilton.—p. 1105.
Effects of Injection of Hypertonic Glucose on Metabolism of Water and Electrolytes in Patients with Edema. R. Tarail, D. W. Seldin and A. V. N. Goodyer.—p. 1111.
Familial Differences in Proportion of Abnormal Hemoglobin Present in Sickle Cell Trait. J. V. Neel, I. C. Wells and H. A. Itano.—p. 1120.
Multiple Myeloma: IV. Abnormal Serum Components and Bence Jones Protein. R. W. Rundles, G. R. Cooper and R. W. Willett.—p. 1125.
Evaluation of Renal Resistances, with Special Reference to Changes in Essential Hypertension. D. M. Gómez.—p. 1143.

Electrolyte Equilibrium During Mercurial Diuresis.—Earlier investigators had shown that the amount of fixed cation in the urine voided during mercurial diuresis corresponded to the amount in an equivalent quantity of body fluid. The quantity of chloride was greater than that which would be expected in the fluid lost, resulting in hypochloremic alkalosis. Administration of acidifying salts prevented alkalosis and at the same time increased diuresis. This paper describes studies on the balance of weight, nitrogen, and electrolytes, the electrolyte changes in the serum, and the cation-anion pattern of the urine in 10 patients with congestive heart failure who were treated with mercurial diuretics. A minority of the patients lost water and electrolytes in a manner indicating that the only significant change in the body fluids was loss of extracellular fluid of normal composition. This small group never developed mercurial unresponsiveness. The majority of patients excreted electrolytes and water in proportions that led to chloride depletion and alkalosis without change in the concentration of sodium in the serum. This type of response was often associated with loss of intracellular fluid and potassium and reduction of serum potassium concentration. Unresponsiveness to the diuretic developed in all but one of this group. Correction of the chloride deficit with ammonium chloride or hydrochloric acid restored mercurial responsiveness. The serum concentrations of chloride and bicarbonate associated with unresponsiveness varied from patient to patient. In those in whom chloride excretion exceeded sodium excretion the surplus of chloride was secreted in combination with potassium and ammonium. The usual renal response to mercurial diuretics may result from interference with tubular reabsorption of chloride, and the loss of fixed cation is probably secondary to the effect on anion excretion.

Journal of International College of Surgeons, Chicago

16:407-542 (Oct.) 1951

Medullary K-Nailing of Humerus to Spine of Scapula for Arthrodesis of Shoulder. G. Pipkin.—p. 407.
Phleboliths. A. de la Pena and J. Reig.—p. 419.
Operative Position for Intrathroacic Procedures. R. H. Betts.—p. 424.
Prefrontal Lobotomy for Phantom Limb and Phantom Pain. A. J. Beller and E. Peyser.—p. 432.
Surgical Repair of Subcutaneous Tissue Defects. M. I. Berson.—p. 436.
Management of Retained Placenta. R. F. Monroe and D. E. Booker. —p. 445.
Multiple Primary Malignant Lesions of Colon: Report of Case. A. Behrend and H. D. Stein.—p. 454.
Genital Fistulas: Review of 69 Cases. H. M. Lazarus.—p. 460.
Accurate Surgical Approach to Appendix. E. I. Greene and J. M. Greene.—p. 470.
Prolapsed Antral Mucosa: Report of Case. V. J. Hittner.—p. 475.
Modified T-Tube Drain. E. S. Jones.—p. 479.
Retropubic Prostatectomy. G. M. Phadke.—p. 481.
Total Versus Subtotal Abdominal Hysterectomy. P. S. Doege.—p. 486.

Journal Lab. and Clinical Medicine, St. Louis

38:497-662 (Oct.) 1951. **Partial Index**

*In Vivo Observations of Effects of Cortisone on Vascular Reaction to Large Doses of Horse Serum Using Rabbit Ear Chamber Technique. R. H. Ebert and R. W. Wissler.—p. 497.
In Vivo Observations of Vascular Reactions to Large Doses of Horse Serum Using Rabbit Ear Chamber Technique. R. H. Ebert and R. W. Wissler.—p. 511.
*Stress Studies on Auto Race Drivers. J. W. Frost, R. L. Dryer and K. G. Kohlstaedt.—p. 523.
Electrophoretic Studies on Serum of Rheumatoid Arthritis Patients Treated with Cortisone. E. L. Hess, A. Cobure and E. F. Rosenberg. —p. 526.
Effects of ACTH and Cortisone on Renal Tubular Transport of Uric Acid, Phosphorus, and Electrolytes in Patients with Normal Renal and Adrenal Function. S. H. Ingbar, E. H. Kass, C. H. Burnett and others. —p. 533.
Comparative Effects of Heparin and Paritol-C upon Blood Coagulation and Prothrombin Time and upon Plasma Antithrombin Level. G. W. Howe, C. A. Armbrust Jr. and E. M. McPeak.—p. 542.
Experiences with Heparin: Comparative Effects of Intravenous and Subcutaneous Administration in the Same Individuals. E. W. Hauch and N. W. Barker.—p. 550.
Riboflavin Excretion as Function of Protein Metabolism in the Normal, Catabolic, and Diabetic Human Being. H. Pollack and J. J. Bookman. —p. 561.
Sodium and Potassium Concentration in Human Cerebrospinal Fluid: I. Normal Values. C. W. Shaw and H. L. Holley.—p. 574.
Diffusion of Dextrans of Different Molecular Sizes to Lymph and Urine. G. Grotte, R. C. Knutson and J. L. Bollman.—p. 577.
Effect of Enterohepatic Circulation on Bromsulfalein Test of Hepatic Function. C. A. Owen Jr.—p. 583.
Venous Catheterization for Continuous Parenteral Fluid Therapy: Use of Heparin in Delaying Thrombophlebitis. L. H. Anderson, S. L. Aldrich, B. Halpern and R. E. Dolkart.—p. 585.
Estimation of Cardiac Output and Evans Blue Space in Man, Using an Oximeter. J. W. Nicholson III and E. H. Wood.—p. 588.
Human Serum Tributyrinase: III. Levels in Cancer. R. Hoare and J. Tuba. —p. 613.
Treatment of Chronic Typhoid Carriers with Terramycin. R. F. Korns and R. M. Albrecht.—p. 617.
Comparison of in Vitro Sensitivity of Freshly Isolated Pathogenic Bacteria to Terramycin and Other Antibiotics (Aureomycin, Chloramphenicol, Penicillin, and Streptomycin). J. C. Ransmeier, H. E. Brown and N. Davis.—p. 620.

Effects of Cortisone on Vascular Reaction to Horse Serum.—Ebert and Wissler investigated the effect of cortisone on in vivo manifestations of serum disease by rabbit-ear-chamber technique. They found that treatment with cortisone effects a profound reduction in the degree of vascular damage caused by serum disease. Vascular tone is better maintained, vascular endothelium tends to keep its normal refractile appearance, swelling of endothelium is suppressed, and the sticking of leukocytes to endothelium is reduced. Sludging of erythrocytes is less marked, and platelet and white blood cell thrombi and emboli are less numerous in treated animals, but suppression of these intravascular changes is less dramatic than the reduction of vascular damage. As a result of increased integrity of vascular endothelium diapedesis of leukocytes is decreased and accumulation of exudate is reduced. The systemic reaction following the second injection of horse serum in treated animals is lessened. The effects of cortisone are reversible, and after treatment is stopped an exacerbation of the vascular changes is observed. It is felt that cortisone has a profound effect on the integrity and reactivity of small vessels and that the suppression of the in vivo manifestations of serum disease is due to this nonspecific effect rather than to suppression of antibody formation or antibody-antigen union.

[illegible] **Studies on Auto Race Drivers.**—Experimental animals [illegible] stress show evidence of increased adrenocortical activity. [illegible] and associates decided to evaluate the effect of combined [illegible] cal and mental stress on normal young healthy males. The [illegible] ress" in this study was the annual 500-mile Indianapolis Speedway Race. This is a competitive and dangerous contest in which the drivers race their cars around a 2.5-mile oval track at average speeds of between 120 and 125 miles per hour. There was evidence of increased pituitary adrenal stimulation during the stress period in that seven of nine subjects showed at least a 90% decrease, and two subjects a 62 and 65% decrease in the total number of circulating eosinophils after the race. Six of seven subjects tested showed increased excretion of 17-ketosteroids of at least 50% following the stress as compared to the control period. There was no consistent response in the sodium, potassium, uric acid, or creatinine levels in studies on urine and serum.

Journal of Thoracic Surgery, St. Louis

22:329-438 (Oct.) 1951

*Results in 278 Patients Who had Modern Type of Thoracoplasty for Tuberculosis: Follow-Up of Living Patients 5 to 15 Years After Operation. W. M. Lees, S. C. H. Yang, M. Papoulakos and others.—p. 329.

Simultaneous Decortication and Resection in Unsuccessful Pneumothorax. A. O. Riley, M. Morris and V. H. Kaunitz.—p. 341.

Decortication Preceding Thoracoplasty for Elimination of Long-Standing Tuberculous Empyema. F. D. Ackman and P. Madore.—p. 358.

Subscapular Paraffin Pack as Supplement to Thoracoplasty in Treatment of Pulmonary Tuberculosis. W. E. Adams, W. M. Lees and J. M. Fritz.—p. 375.

Endoscopic Sponge Biopsy. M. G. Carter, R. R. Nesbit and C. A. Piper.—p. 386.

Pathogenesis of Bronchopleural Fistulas Following Excisional Therapy for Pulmonary Tuberculosis. G. N. Stemmermann, C. F. Daniels and O. Auerbach.—p. 392.

Bronchiectasis: Comparative Study of Tuberculous and Nontuberculous Pyogenic Suppurative Disease. J. Gordon, R. Brook and P. C. Pratt.—p. 411.

Function Tests in Pulmonary Surgery. G. Birath and C. Crafoord.—p. 414.

Nocardiosis: Report of Single Case with Recovery. R. G. Connar, T. B. Ferguson, W. C. Sealy and N. F. Conant.—p. 424.

Pulmonary Resection for Histoplasmosis: Case Report. O. L. Bettag.—p. 434.

Long-Term Results of Modern Thoracoplasty.—The modern type of thoracoplasty with removal of segments of from 3 to more than 10 ribs was performed on 278 patients with pulmonary tuberculosis. The follow-up period was from 5 to 15 years. Little difference in results was noted with regard to sex or side of the operation. No streptomycin or penicillin was administered either before or after the operation. The major indication for thoracoplasty was cavitary disease. Of the 278 patients, 75 (27%) died from 24 hours to 13½ years after the thoracoplasty. If three months after the operation is considered the maximum period during which death may be attributed directly to the thoracoplasty, 10 patients died as a result of the operation, a mortality rate of 3.6%. Of the 65 patients who died more than three months after operation, 26 died of nontuberculous causes, 33 died of tuberculous causes, and 6 died of unknown causes. Of 76 patients who had tuberculous bronchitis, 53 are alive and 46 of these have negative sputum; 2 patients are dead and 5 of them lived more than 5 years aft the operation. Spread or reactivation of the disease occurred i 34 patients, of whom about two-thirds survived and one-third died. Of the 278 patients, 203 are living; 174 (85.7%) of the have negative sputum. By adding to these 174 negative patient 8 patients who died from causes unrelated to tuberculosis an whose follow-up cultures had been negative, 182 patients (65.4% of the total of 278 patients and 89.6% of the 203 living patients have or had negative cultures. According to the National Tuberculosis Association's classification in 1949 when the author study was completed, the 278 patients may be listed as follows apparently cured, 140 (50.3%); arrested, 9 (3.3%); apparentl arrested, 36 (12.9%); quiescent, 2 (0.7%); improved, 11 (3.8% worse, 5 (2%); and dead 75 (27%).

J. Venereal Disease Information, Washington, D. C.

32:263-304 (Oct.) 1951

Rational Approach to Yaws Control. F. W. Reynolds, T. Guthe a G. Samame.—p. 263.

Development of Treponemal Immobilizing Antibodies in Mice Followi Injection of Killed Treponema Pallidum (Nichols Strain). C. McLeod and H. J. Magnuson.—p. 274.

Study of Immunity in Experimental Syphilis as Demonstrated by Conta Exposure Challenge. C. P. McLeod and R. C. Arnold.—p. 279.

Cerebrospinal Fluid—Comparative Study of Specimens Taken fro Cisterna Magna and Lumbar Subarachnoid Space. M. R. Davis, G. Cannefax and E. B. Johnwick.—p. 284.

Comparison of Cisternal and Lumbar Punctures.—Simultaneou cisternal and lumbar punctures were performed on 102 u selected adults admitted to a medical center in order that ce tain components of cerebrospinal fluid taken from these sit might be compared. Comparison of cell counts revealed litt difference in the fluid from the two sites except in cases of mark pleocytosis, in which the lumbar fluid may contain appreciab more cells than the cisternal fluid. There is slightly more reag (Kolmer's complement-fixation test) in the lumbar than in t cisternal fluid. Total protein values of fluids from these tw sites varied from case to case. However, in specimens in whi there is no appreciable elevation of values the cisternal to lum bar total protein ratio is usually about 2:3. Lumbar specime produce more consistent reactivity than cisternal fluids when t colloidal mastic test is applied. This finding is consistent wi the fact that total protein values are higher in lumbar th cisternal fluids.

New England Journal of Medicine, Boston

245:475-512 (Sept. 27) 1951

Safeguards in Gastric Resection for Duodenal Ulcer. F. P. Ross a R. Warren.—p. 475.

ACTH Therapy in Ulcerative Colitis and Regional Enteritis. S. J. Gr R. W. Reifenstein and J. A. Benson Jr.—p. 481.

Suicidal Risk: Its Diagnosis and Evaluation. J. F. Oliven.—p. 488.

Aureomycin in Treatment of Infectious Mononucleosis. J. B. Burnett a J. Milne.—p. 495.

BCG Vaccination. R. C. Partenheimer.—p. 496.

245:513-548 (Oct. 4) 1951

Diabetic Nephropathy: Clinical Syndrome. J. L. Wilson, H. F. Root a A. Marble.—p. 513.

Amelioration of Diabetes and Striking Rarity of Acidosis in Patients w Kimmelstiel-Wilson Lesions. C. G. Zubrod, S. L. Eversole and G. Dana.—p. 518.

Use of Tantalum Mesh in Chest-Wall Defects. J. M. Beardsley and C. Cavanagh Jr.—p. 525.

Development of Neurologic Manifestations of Pernicious Anemia Dur Multivitamin Therapy. C. L. Conley and J. R. Krevans.—p. 529.

Antihistamines: Their Use and Abuse. W. S. Burrage.—p. 532.

Diabetic Nephropathy.—The term "diabetic nephropathy" suggested for a renal disease which is seen only among patie with diabetes. Although it occurs at all ages, it is seen m frequently in young patients. The clinical manifestations diabetic nephropathy include albuminuria, increased capilla fragility, retinal hemorrhages, peripheral edema, and hyperte sion and azotemia. All manifestations progress to death, wh usually results from uremia but at times results from myocard infarction, congestive heart failure, or cerebrovascular accide

Histopathological findings include all or most of the following lesions: acute and chronic pyelonephritis, arteriosclerosis, arteriolosclerosis, and intercapillary glomerulosclerosis. Manifestations of diabetic nephropathy were shown by 62 patients (25%) of 247 young patients with severe diabetes of 10 to 34 years' duration with onset at ages between 18 months and 30 years. Among the total of 247 patients 37 had adequately controlled their diabetes by early and continued use of insulin, careful measurement of a planned diet, regular medical examination, and daily urine tests with adjustment of diet and insulin to secure sugar-free specimens. Not one of these had nephropathy. The authors feel that a keener awareness of this syndrome would result in wider recognition of the importance of control of diabetes.

Amelioration of Diabetes with Kimmelstiel-Wilson Lesions.—A remarkable reduction in insulin requirement in a diabetic who died in uremia and the clinical axiom that progression of renal disease may relieve diabetes induced Zubrod and associates to study the improvement in diabetes mellitus with renal disease and compare the course of diabetes mellitus in patients with and without renal lesions. The 190 diabetic patients who came to autopsy at the Johns Hopkins Hospital were divided into three groups: those with Kimmelstiel-Wilson lesions, those with other types of renal lesions, and those with no renal lesions. The sole criterion of the Kimmelstiel-Wilson lesion is the "lumpy loop" or hyaline mass in the glomerulus. The term "intercapillary glomerulosclerosis" has been avoided, partly because of possible confusion with intercapillary glomerulonephritis, and partly because of doubt concerning the intercapillary location of the hyaline mass. Varying degrees of arteriolosclerosis and arteriosclerosis of the kidney are almost always associated with the Kimmelstiel-Wilson lesion. If these processes are pronounced, identification of the hyaline masses may be difficult. Although the initial insulin requirements of patients with Kimmelstiel-Wilson lesions were as high as those of the two control groups, as time passed the diabetics with Kimmelstiel-Wilson lesions required progressively less insulin and the diabetics without these lesions required progressively more. In some cases the improvement was so great that patients with previously severe diabetes became hypoglycemic on small doses of insulin. The authors also stress the virtual absence of acidosis throughout the course of diabetes in patients with Kimmelstiel-Wilson lesions. This rarity of diabetic acidosis is so striking that it provides a clue during life to the presence of Kimmelstiel-Wilson lesions and suggests a metabolic variation from ordinary diabetes.

Northwest Medicine, Seattle

50:741-824 (Oct.) 1951

I Remember When. G. O. A. Kellogg.—p. 763.
Plication Operation in Treatment of Small Bowel Obstruction. R. S. Smith.—p. 765.
Emergency Surgery and Emergency Treatment of Eye Burns. A. C. Jones. —p. 769.
Local Anesthesia in Gynecologic Surgery. H. E. Dedman.—p. 770.
Arterio-Venous Aneurysm of Foot Following Plantar Fasciotomy. J. J. Coughlin.—p. 772.
Hiatus Hernia and Gastrointestinal Diverticulosis. A. M. Popma and A. M. Stone.—p. 773.
Discussions of Papers Presented at Boise Meeting of Southern Idaho Chapter of American College of Surgeons. C. S. Stone Jr.—p. 774.

Oklahoma State Medical Assn. J., Oklahoma City

44:341-380 (Sept.) 1951

Malaria in Oklahoma. G. F. Mathews.—p. 343.
The Small Child: Its Diagnosis and Treatment. H. J. Rubin.—p. 345.
Use of Detergents as Cleansing Agent for Vaginal Tract. C. E. White. —p. 348.
Report on Maternal Mortality—1950. C. E. Green.—p. 349.

44:381-418 (Oct.) 1951

Biopsy. H. C. Hopps.—p. 384.
Hyperparathyroidism—Osteitis Fibrosa Cystica Parathyroid Adenoma—with Report of Case. J. C. Brogden and L. Lowbeer.—p. 386.
Hemoptysis—70 Cases. P. B. Cameron.—p. 392.
Arterial Insufficiency with Emphasis on Treatment of Acute Arterial Occlusion. J. C. O'Leary, R. D. Haines and W. T. Jay.—p. 394.

Pennsylvania Medical Journal, Harrisburg

54:921-1016 (Oct.) 1951

Anatomy of Pneumonias—Alveolar Exudation. W. D. Gardner.—p. 937.
Maternal Mortality in General Hospital for 20-Year Period. J. B. Nutt. —p. 942.
*Treatment and Management of Asymptomatic Phase of Neurosyphilis. W. T. Ford and J. H. Stokes.—p. 945.
Recognition and Management of Depressed Mental State (Commonly Seen Early by General Practitioners). W. Drayton Jr.—p. 949.
Remissions in Case of Idiopathic Thrombopenia from Induction of Hypercalcemia. F. V. Piccione and J. T. Delehanty.—p. 954.
Histoplasmosis in Lancaster County, Pennsylvania: Report of Two Oral Indigenous Cases with One Recovery and One Autopsy. P. O. Snoke. —p. 957.
Synopsis of Basic Factors of Cerebral Palsy. C. C. Pool and J. G. Furey. —p. 960.
Metabolyte Antagonists in Treatment of Malignancy. R. Jones Jr.—p. 966.
Typhoid Fever in Children. A. R. Schwartz.—p. 970.

Asymptomatic Neurosyphilis.—Of 160 patients with asymptomatic neurosyphilis treated with penicillin during the past six years, only 6 (3.7%) showed signs of clinical progression of the disease. Asymptomatic neurosyphilis is the phase of syphilis in which the only evidence of the disease in the nervous system consists of abnormalities of the spinal fluid. Involvement of the nervous system usually occurs during the first two years of the disease or not at all. Early detection of asymptomatic neurosyphilis requires examination of the spinal fluid in every case of early syphilis 12 to 24 months after completion of treatment. The following four tests should be made on every specimen of spinal fluid: (1) cell count, (2) total protein, (3) spinal fluid test for syphilis (Wassermann-titer), and (4) colloidal gold or mastic. Penicillin is the treatment of choice in asymptomatic neurosyphilis. The total dose of penicillin should be approximately 10,000,000 units given over a period of not less than 10 days. Febrile Herxheimer reactions may be expected in about 24% of all cases; patients with active spinal fluids are more likely to have Herxheimer reactions than those with inactive fluids. Reducing the initial dose of penicillin will not reduce the incidence or intensity of the Herxheimer reaction. The spinal fluid cell count in a bloodless specimen is the most sensitive and reliable indicator of activity of the syphilitic process. An elevated cell count six months after treatment indicates failure to arrest the disease, and the patient should be re-treated. A persistent positive spinal fluid Wassermann and colloidal reaction in an otherwise normal fluid is not an indication for re-treatment. It appears that penicillin will prevent symptomatic neurosyphilis if asymptomatic patients are treated early.

Postgraduate Medicine, Minneapolis

10:269-358 (Oct.) 1951

Therapeutic Indications for Vitamins in Mixtures. T. D. Spies, R. E. Stone, G. Garcia-Lopez and others.—p. 269.
Testosterone Propionate in Carcinoma of Breast. E. A. Banner.—p. 285.
Developmental Diagnosis of Infant Behavior. A. Gesell.—p. 289.
Lesions of Adrenal Glands and Pancreas. W. Walters.—p. 295.
Atresia of Esophagus With or Without Tracheo-Esophageal Fistula. W. J. Potts.—p. 304.
Medical Treatment of Ulcerative Colitis. J. A. Bargen.—p. 317.
Local Treatment of Dog Bites. R. T. Vinnard.—p. 322.
Congenital Hernias in Infancy and Childhood. P. A. Caulfield.—p. 327.
Ketogenic Diet in Treatment of Epilepsy in Children. S. Livingston. —p. 333.

Psychiatric Quarterly, Utica, N. Y.

25:1-156 (Part I [Supplement]) 1951. **Partial Index**

Case of Reactive Depression Suffering from Ulcerative Colitis: Serial Psychological Investigation. M. M. Tunis and H. Dörken Jr.—p. 22.
Survey of Neuropsychiatric Admissions and Departures at Veterans Administration Hospital, Northport, N. Y., from July 1, 1947 to June 30, 1948. L. Drubin and L. F. Verdel.—p. 40.
Report on *Application* of Group Psychotherapy at Utica State Hospital. E. Gosline.—p. 65.
Comments on Relationship of Responsivity of Adrenal Cortex and Schizophrenia. J. H. Friedlander.—p. 76.
Stress Factors Involved in Maladjustment of Soldiers. E. Davidoff. —p. 108.

Rhode Island Medical Journal, Providence

34:513-568 (Oct.) 1951

Management of the Infertile Couple, S [illegible] ium. W. A. Reid, C. Potter, S. I. Raphael, N. Chaset and E [illegible] 529.
Hormonal Therapy for Diseases [illegible] C. L. Deming. —p. 537.

Southern Medical Journal, Birmingham, Ala.

44:881-992 (Oct.) 1951

Physical Treatment in Internal Medicine. S. Mead.—p. 881.
Combined Drug Therapy for Parkinson's Disease. J. C. Edwards, E. E. Mueller, M. Ohmoto and others.—p. 886.
Use of Cystogram and Urethrogram in Diagnosis and Management of Rupture of Urethra and Bladder. J. P. Robertson and J. W. Headstream.—p. 895.
Splenectomy as Method of Treatment in Case of Felty's Syndrome. W. H. Wilson and A. T. Hamilton.—p. 902.
Use of Procaine Amide in Ventricular Tachycardia. R. M. Anderson, J. A. Boone and R. R. Coleman.—p. 905.
Contrast Between Anoxia of Experimental Pulmonary Arterial Occlusion and of Tracheal Obstruction with Special Reference to Changes in S-T Segment and T-Wave. J. T. Cuttino.—p. 909.
Congenital Malformations of Heart Amenable to Surgery: With Special Emphasis on Isolated Valvular Pulmonary Stenosis with Closed or Patent Foramen Ovale. J. F. Dammann Jr.—p. 915.
*Esophageal Hiatus Hernia Simulating Coronary Artery Disease. E. K. Doak.—p. 918.
Differential Diagnosis of Coma. R. L. Pullen.—p. 921.
Chronic Rheumatoid Arthritis. E. M. Smith.—p. 925.
Heart in Hemochromatosis. H. W. Keschner.—p. 927.
Cyclodialysis: Simplified Technic. J. H. Allen.—p. 931.
Neurosurgical Aspects of Spontaneous Subarachnoid Hemorrhage. J. G. Lyerly.—p. 936.
ary Breech Presentation and External Cephalic Version: Management f 308 Primary Breech Presentations. I. A. Siegel and H. B. McNally. p. 942.
General Practitioner and Fractures of Lower Extremities. J. A. Key. —p. 950.

Esophageal Hiatus Hernia Simulating Coronary Disease.—Herniation of the stomach through the esophageal hiatus of the diaphragm is not uncommon, and is noted with increasing frequency as the average age of patients examined progresses beyond 40 years. Such hiatus hernias may be asymptomatic; they may cause gastrointestinal symptoms; and they may cause pain behind the sternum, in the precordium, in the upper back, neck, shoulders or arms, in the same distribution and with the same intensity as the pains of angina pectoris or myocardial infarction. Persons with severe attacks of pain from hiatus hernia seem to have the same paralyzing fear that distinguishes angina pectoris and myocardial infarction, but the blood pressure is not lowered and the signs of shock do not persist beyond the duration of pain. Attacks of severe pain due to esophageal hiatus hernia are not ordinarily accompanied by fever, leukocytosis, or an increased erythrocyte sedimentation rate. The electrocardiogram may indicate cardiac hypertrophy, ventricular preponderance, and other more or less specific indications of cardiac deterioration, but serial electrocardiograms will not show the progressive changes characteristic of focal myocardial necrosis. In cases of hiatus hernia suggestive of angina pectoris, the two-step exercise test of Master and the anoxemia test of Levy will not bring on the pain or reveal the electrocardiographic changes diagnostic of significant coronary disease. The author feels that all patients with symptoms of angina pectoris should be examined for hiatus herniation and should a hernia be found, the coronary circulation should be evaluated by the Master test or the Levy test. Even in the presence of proved angina pectoris, proper management of a hiatus hernia may relieve the distressing symptoms.

Texas State Journal of Medicine, Fort Worth

47:673-734 (Oct.) 1951

Diagnosis of Intracranial Tumors. W. W. McKinney.—p. 679.
Vascular Lesions of Intracranial Cavity: Surgical Treatment. A. D'Errico. —p. 681.
Management of Spontaneous Subarachnoid Hemorrhage Due to Intracranial Aneurysms. I. J. Jackson and Y. C. Smith Jr.—p. 685.
*Roentgenographic Abnormalities in Disease of Cervical Intervertebral Disks: Report on 23 Patients with Compression of Cervical Root. G. Ehni.—p. 689.
Derangement of Intervertebral Disk: Possible Pain Mechanisms. H. B. Macey.—p. 695.
Laboratory Aids in Diagnosis and Treatment of Rheumatoid Arthritis. B. B. Wells, W. Ross and R. D. Lowrey.—p. 700.
Urologic Problems Confronting the General Practitioner. H. E. Isaacks and D. E. Compere.—p. 706.
Vesicovaginal Fistula: Its Cause, Prevention, and Management. M. K. O'Heeron, N. McDonald and V. Bullock.—p. 709.

Disease of Cervical Intervertebral Disk.—Degenerative and traumatic disturbances of the cervical intervertebral disks are common causes of pain in the neck, shoulder, scapular region, arm, and hand. Roentgenologic examination is of great importance in distinguishing these abnormalities from the presen of cervical rib, the scalenus anticus syndrome, neoplasm of th spinal cord, syringomyelia, and neuritis. The frequency of ce vical disk disease is indicated by the fact that of 52 patien with herniated disks, 37 had them in the lumbar and 15 in th cervical region. This report is concerned with 23 patients wi surgically proved cervical disk disturbances causing compressio of the cervical roots. All the lesions occurred at either the fif to sixth or sixth to seventh cervical interspaces. The cervic spine was normal on lateral roentgenograms in only 4 patien but in 19 roentgenograms revealed disturbances of the cervic curve, narrowing of an interspace, osteophytic proliferation vertebral margins, or combinations of the three. Myelograph was performed for 21 of the 23 patients and in 19 evidence cervical root involvement was seen. The abnormalities seen posteroanterior cervical myelograms are as follows: 1. T radiolucency over a disk is exaggerated. 2. A lateral compre sion of the root is indicated by broadening of the root bun shadow within the sleeve. 3. The root and its sleeve shad may be medially displaced so that the root complexes on o side do not appear in a straight vertical line. 4. The root slee shadow on one side or the other may be pushed cephalad that the intervals between the shadows on one side are not eq distant. 5. There may be obliteration of the entire root slee shadow with greater or less indentation of the parent oil colum In a little more than half of the patients obvious myelograph abnormality was associated with extradural lesions. The mainder of the patients had small defects that might easily ha been overlooked on fluoroscopy and even on roentgenogra if only small amounts of medium had been used.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

59:495-550 (Oct.) 1951

Problem of Common Duct Exploration at Time of Cholecystecto J. W. Baker and J. J. Koutsky.—p. 495.
Corpus Carcinoma. H. C. Stearns.—p. 504.
Some Phases of Uterine Bleeding Problem. C. E. McLennan.—p. 512.
Studies in Pathology of Abnormal Uterine Bleeding. A. N. Webb.—p. 5
*Streptokinase and Streptodornase in Suppurative Lesions. C. Morrell a J. A. Weinberg.—p. 524.
Congenital Anomalies in Offspring of Consanguinous Union: Case Rep E. Melinkoff.—p. 529.
Single Dose Low Spinal Anesthesia in Obstetrics: Report on 4,000 Cas H. P. Torkelson and C. L. Cooley.—p. 533.
Metallic Cap Replacement of Radial Head Following Fracture. C. R. C and J. W. Howard.—p. 539.

Streptokinase and Streptodornase in Suppurative Lesions. Streptococci produce, among other substances, two enzymes th in combination can liquefy the solid portion of purulent ex dates. The enzymes, streptokinase and streptodornase, may obtained in almost pure form in broth cultures of streptoco in bacteria-free filtrates. Streptokinase acts on fibrin, and stre todornase acts on desoxyribose nucleoprotein. When instill into collections of purulent exudate in humans, the enzymes a on the substrate of debris for about 20 hours. After this ti the liquefied exudate can be withdrawn readily. The authors this paper are currently employing these enzymes in treatme of various conditions, and describe representative cases to ill trate results obtained with this method of enzymatic debri ment. In the first patient, who had secondary empyema w extensive compression of the right lung after a spontane pneumothorax, the very thick fibrous empyema membrane w not affected by streptokinase and streptodornase and it was n essary to adopt other means of treatment. The second pati had a severe systemic reaction (elevated temperature of 103 and malaise) to the instillation of the enzymes into the pleu space. While continued treatment might have led to furth expansion of the lung, probably enzymatic activity alone wo not have freed the captive lung entirely. Case 3 illustrates t a satisfactory result may be obtained in relatively prolong empyema if there is no fibrous barrier to prevent reexpansion the lung after the enzymatic removal of the exudative coagul and debris. The fourth case demonstrates diagnostic use enzymatic debridement. Initial attempts to outline the extens and tortuous sinus tract had been unsuccessful. Clearance of t solid matter permitted the free flow of radiopaque mediu giving concise information regarding the limits of the absce

FOREIGN

Acta Endocrinologica, Copenhagen

8:97-192 (No. 2) 1951. **Partial Index**

Analysis of Gonadotrophic Activity of Ultrafiltration Concentrate of Human Urine. A. A H. Kassenaar and F. J. A. Paesi.—p. 125.
Effect of Ovarian Hormones on Metabolism of Acid Soluble Phosphorus in Myometrium. U. Borell.—p. 131.
*Excretion of Gonadotrophin and Androgenic Substances by Normal Men Between 39 and 63 Years of Age: Serial Determinations Over 10 Years. H. I. Schou.—p. 149.
Two Cases of Chronic Renal Disease Simulating Morbus Addison. S. Johnsson, R. Luft, B. Sjögren and J. Waldenström.—p. 165.
Effectiveness of Natural and Synthetic Oestrogenic Substances in Women. A. B. V. Rydén.—p. 175.

Excretion of Sex Hormones by Men.—In order to obtain information about the urinary excretion of sex hormones in elderly males and the male climacteric, quantitative studies were made on 27 healthy men at various times over a period of 10 years. Their ages ranged from 39 to 63. In view of individual variations, it seemed advisable to compare the values in the same persons over a range of years. Gonadotropin was excreted at about the same rate during the period of from 39 to 63 years of age. Earlier investigators had observed an increase in gonadotropin excretion about the age of 60. Although the authors did not observe such an increase, they feel that there may have been too few determinations for the subjects at this age. A steady decrease in the excretion of androgenic substances was observed between the 39th and the 62nd year. Since the relations found between hormone excretion and age agreed essentially with earlier observations, serial determinations on the same subjects provide no more information than single determinations in different subjects.

Archivum Chirurgicum Neerlandicum, Arnhem

3:161-252 (No. 3) 1951

*Diet and Appendicitis. L. W. van Ouwerkerk.—p. 164.
Lobectomy and Pneumonectomy in Tuberculosis: Review of 148 Cases. J. Swierenga.—p. 179.
Diagnosis and Treatment of Pulmonary Cysts. L. D. Eerland.—p. 203.
Bullet Wounds of Spinal Cord and Cauda Equina. M. J. Kingma.—p. 238.

Diet and Appendicitis.—From a review of the literature, van Ouwerkerk gained the impression that acute appendicitis is comparatively frequent and dangerous in Northern Europe, America, and Australia. Among native populations in Asia and Africa, but not among Europeans living there, appendicitis is rare. When the natives eat the richer diets of Europeans, then they also have a higher incidence of appendicitis. Before World War II appendicitis was relatively frequent and serious among the Dutch, both in Europe and Indonesia, but during the war the incidence of appendicitis in the Netherlands decreased. With a diet consisting of inadequate amounts of rice, coarse vegetables, and almost no meat or fats, such as was given to Dutch women and children in a Japanese internment camp, appendicitis almost disappeared. This seems to indicate that there is a relation between diet, particularly the fat content, and the incidence and mortality of appendicitis.

Arquivos de Neuro-Psiquiatria, São Paulo

9:191-302 (Sept.) 1951. **Partial Index**

*Peripheral Trigeminal Neurectomy in Treatment of Trigeminal Neuralgia. J. Zaclis.—p. 228.

Neurectomy in Trigeminal Neuralgia.—Zaclis describes the technique he used for peripheral neurectomy in 34 patients with trigeminal neuralgia, including 3 patients whom alcohol injections of the gasserian ganglion had not benefited. In one of the patients a retrogasserian neurotomy and a bilateral prefrontal leukotomy also failed. Neurectomy of the infraorbital branches was performed on 28 patients, and in eight of them neurectomy of the branches of the mental nerves on the same side was also carried out. Three patients had only neurectomy of the branches of the mental nerve, two had only resection of the peripheral branches of the ophthalmic nerve, and one had only bilateral resection of the infraorbital branches. The operation was followed by immediate and complete relief of pain in all cases. In the postoperative period all the patients experienced moderate paresthesia in the neurectomized areas, but the sensation diminished progressively without special treatment. One patient had transient paralysis of the oculomotor nerve. Facial paralysis and serious complications did not occur. Six patients did not report after the postoperative period. Follow-up observations of 28 patients were made for two or three years. Relief from pain had been maintained two or three years after the operation in 23 patients. Pain reappeared in five patients one or two years after apparent cure had been obtained by operation. In all five cases peripheral neurectomy was repeated with success. The author concludes that peripheral trigeminal neurectomy is a simple, harmless, and useful operation for trigeminal neuralgia. It can be performed without hospitalization. Recurrence of pain is rare and can be controlled by repeated peripheral trigeminal neurectomy. The first and second operations do not contraindicate another operation if it is necessary.

Beiträge zur klinischen Chirurgie, Munich

182:385-514 (No. 4) 1951. **Partial Index**

Value of Preoperative Roentgen Irradiation in Cancer of Breast. H. G. Stoll.—p. 401.
Do the Permanent Results of Surgical Treatment of Gastric Carcinoma Permit Conclusions on the Biology of Carcinoma? E. Ligdas.—p. 412.
Cancer of the Extremities: Report on 20 Cases. M. Lasthaus.—p. 432.
*Treatment of Melanoma. M. Lasthaus.—p. 435.
Diseases of Diaphragm as Cause of Acute Symptoms in Upper Abdomen. U. Graff.—p. 440.
Lingual Struma with Remarks on Goiter Surgery. D. Kulenkampff and P. Heilmann.—p. 458.
Rotation Fractures of Neck of Femur in Lateral Exposure: Their Reposition. H. Bumiller.—p. 465.
Local Wound Prophylaxis with Penicillin Powder. H. F. Oestern.—p. 498.

Biologic Factors of Carcinoma of Stomach.—Ligdas investigated the results of surgical treatment in 1,240 cases of stomach carcinoma to determine the biology of carcinoma. Whether carcinoma is a local or a systemic disease is briefly considered on the basis of results of symptomatic treatment. Factors that influence the growth of carcinoma are discussed and the signifiance of the body's defense powers, which may be related to the mesenchyme, are stressed. Patients undergoing resection are classified in four groups with regard to metastasis to lymph nodes and other areas. The results obtained in group 1 (cases in which no metastases were found at operation) and in group 2 (cases in which all involved lymph nodes presumably were removed at operation) were not as good as expected. In groups 3 and 4, which included patients in whom regional lymph node metastases or distant metastases could not be removed, some patients had no relapses for several years. These findings suggest that the permanent results were not entirely dependent on the findings at operation, but were probably influenced by the defense function of the body. Although this function is systemic, it is also manifested locally and is really a mesenchymal reaction. In cases in which inflammation around an ulcer degenerates into carcinoma, there is less tendency for metastases to occur and the late results are more favorable. To explain that carcinoma is not merely a local disease and that prolongation of life is not completely dependent on the extent of the operation, the author reviews theories on the pathogenesis of carcinoma and suggests that an explanation might be found in the germinal layer theory, which ascribes special importance to the mesenchyme.

Treatment of Melanoma.—The diagnosis of melanomas can be difficult, because some melanomas have no pigment, and in some cases with metastasis the primary tumor cannot be found. Furthermore, approximately 25% of all melanomas originate in benign pigmented moles and warts. An exploratory biopsy for diagnostic purposes or inadequate excision of a nevus can suddenly cause fatal metastasis from a mole that showed no signs of irregular growth before. The author feels that this fact is not sufficiently appreciated by some practitioners and even some surgeons, and the clinicians are surprised when an apparently harmless "liver spot" suddenly causes massive dissemination that cannot be checked. The author describes six such cases that he observed in the last three years. One man had had a brown spot on the back of his head for many years. Three weeks after its removal, he was hospitalized for irradiation when the spot recurred, but pulmonary metastases were also present, and he died four weeks later. A similar sequence of events characterized the other cases, and death occurred after several weeks or months. Radical treatment such as amputation should be performed when it is possible. Melanomas in the region of the head, except in the eyes, should be treated by postoperative short-distance irradiation. If a residual tumor remains after irradiation, it should be removed only after a quiescent, growth-free interval of several years. Prophylactic removal may be advisable for dark moles exposed to mechanical irritation.

British Journal of Nutrition, London

5:167-274 (No. 2) 1951. **Partial Index**

- *Comparison of Vitamin C Content of Vegetable Stew When Prepared on Large Scale in Open and Pressure Cookers. A. R. P. Walker and U. B. Arvidsson.—p. 167.
- Dietary Surveys: Variation in Weekly Intake of Nutrients. J. Yudkin. —p. 177.
- Evaluation of Leanness-Fatness in Man: Norms and Interrelationships. J. Brožek and A. Keys.—p. 194.
- ction of Vitamin C in Urine Following Repeated Administration of Big Test Doses. J. Sigurjonsson.—p. 216.
- omposition of Human Milk with Special Reference to Relation Between Phosphorus Partition and Phosphatase and to Partition of Certain Vitamins. R. Chanda, E. C. Owen and B. Cramond.—p. 228.
- Relative Nutritional Values of Animal and Vegetable Proteins for Animals. K. J. Carpenter.—p. 243.
- Conversion Factors for Vegetable and Animal Foods for Human Consumption. K. L. Blaxter.—p. 250.
- Economic and Statistical Aspects of Vegetable and Animal Foods. D. A. Boyd.—p. 255.
- Nutritive Value of Vegetable Proteins and Its Enhancement by Admixture. H. Chick.—p. 261.
- *Clinical Picture in Children Fed After Weaning on Predominantly Vegetable Diet. L. Wills.—p. 265.
- Nutritional Adequacy of Vegetable Substitute for Milk. R. F. A. Dean. —p. 269.

Vitamin C Content of Stews Prepared in Open and Pressure Cookers.—In the large compound kitchens of the gold mines of the Witwatersrand, where food is prepared for more than 250,000 Bantu workers, the present trend is to replace open cooking by pressure cooking. Vegetable stew is the chief, and sometimes the sole, source of vitamin C for the Bantu workers, among whom scurvy is seldom observed, and therefore the vitamin C content of stew cooked on a large scale by both methods has been compared. Experiments have shown good retention of the vitamin with either method and a slightly better retention with open cooking, the mean values for tests carried out on four separate days being 89% and 79%, respectively. The usual helping of stew prepared by either method provides daily 45 to 50 mg. of vitamin C, an amount that may be considered adequate. The authors conclude that, as regards vitamin C retention, there is no reason why pressure cooking should not be adopted.

Children Fed on a Vegetable Diet.—The clinical findings in infants and children fed after weaning on predominantly vegetable diets are the subject of this paper. The author describes malignant malnutrition, kwashiorkor, or fatty liver disease of Bantu infants. This syndrome, which seems to be the extreme effect of such diets, is not limited to the African; Czerny's "Mehlnährschaden" (nutritional deficiency from starchy foods) is probably the same condition in European children. Since it was believed that the children with kwashiorkor were dying of protein starvation and excess carbohydrate and that with such fatty livers administration of fat was contraindicated, it was decided to force-feed them with maas, which is curds made from skim milk. After a week skimmed milk powder was added to the maas and later a full mixed diet supplemented with extra milk was given. Improvement was rapid in most cases. After a few days diuresis occurred, resulting in rapid loss of weight followed by a steady gain. The diarrhea usually ceased in a few days. The liver gradually decreased in size. The serum protein values increased steadily, but the blood count fell slightly at first and then rose slowly.

British Journal of Surgery, London

39:97-192 (Sept.) 1951

- Perivascular Neural Pattern of Femoral Region. F. R. Wilde.—p. 97.
- Intestinal Obstruction Produced by Failure of Intestinal Rotatio Description of Case. R. Spencer.—p. 105.
- Presacral Perirenal Pneumography. J. Blackwood.—p. 111.
- Mediastinal Goitre. E. Wilson.—p. 120.
- Orbital Complications of Head Injury. R. S. Hooper.—p. 126.
- Diverticulosis of Jejunum—A Clinical Entity. I. M. Orr and J. Y. Russell.—p. 139.
- *Differential Diagnosis of Malignant Disease of Peritoneum. O. Dan —p. 147.
- *Cerebral Angiography in Abscess of Temporal Lobe. P. H. Schu —p. 156.
- Trochanteric Fractures of Femur. W. G. France and C. R. Berk —p. 166.

Differential Diagnosis of Malignant Disease of Peritoneum. Malignant disease of the peritoneum can usually be diagnos from its gross appearance, but seven cases illustrating diagnos difficulties are discussed in this paper. In one patient with ascit fibrous stricture of the ileum, and enlarged regional lymph nod the peritoneum covering the small intestine and its mesent was studded with round white nodules, suggesting tuberculo or cancer. Although histological study of the nodules and lym nodes showed no evidence of cancer or tuberculosis, necro two weeks later revealed a round-celled carcinoma of the sto ach. In another case peritoneal carcinomatosis appeared to b strangulated hernia. In the remaining cases carcinomatosis simulated by peritoneal nodules due to tuberculosis, polyarter nodosa, encapsulated food particles, and fibrosis in a chro hernia. The commonest malignant disease of the peritoneum secondary carcinoma, and this usually arises from the tra celomic dissemination of a primary abdominal carcino Occasionally the peritoneum is involved by lymph or blo borne metastases from an extra-abdominal carcinoma, sarco or other tumor. Primary tumor of the peritoneum is rare. Ma nant disease of the peritoneum appears in the following for discrete nodules, plaque-like masses, diffuse adhesive forms, subperitoneal forms, cystic forms, pedunculated forms, "s graft" forms, pseudomyxoma peritoneii, and bizarre forms. E of these may be simulated by a variety of lesions. The o peritoneal appearances pathognomonic of malignancy are bilicated nodules and large masses of chaotically arranged tissue. Operative diagnosis, therefore, often depends on ass ated findings. Histological examinations should always be m and if they are inconclusive for diagnosis, examination wit polarizing microscope and mucicarmine-stained sections may helpful.

Cerebral Angiography in Abscess of Temporal Lobe.—The d nosis of brain abscess is often difficult and may be especi so in patients receiving systemic antibiotic treatment for m toiditis or other infections. In these cases symptoms may absent, the most equivocal or minimal abnormal signs may significant, and slight changes in the cerebrospinal fluid may the only warning of the complication. Radiographs may oc sionally show pineal shift and, more rarely, gas in the ca of the abscess; but oftener there is little indication of suc lesion. Accessory methods of diagnosis have thus become creasingly necessary. For the diagnosis of temporal lobe abs electroencephalography has not been sufficiently accurate, air ventriculography and encephalography have been regar as somewhat hazardous. Angiography, however, has been fo to be a safe and reliable aid. Twelve patients with temporal abscess have been studied by angiography at Radcliffe Cli In 9 of the 12 cases the source of infection was mastoiditis, was bronchogenic, one followed a streptococcal meningitis sumed to have arisen from an infected tooth socket, and in other case the source was probably in the thorax. In nine c angiography was performed before aspiration or removal of abscess. In the other three it was performed after aspiration before excision to provide further information about the les The angiographic technique consisted of percutaneous punct of the common or internal carotid artery under local anesthe followed by the injection of 10 to 12 cc. of a 35% solutior iodopyracet ("diodone") as a contrast medium. Radiogra were taken in anteroposterior and lateral projections, t four, and eight seconds after the start of the injection. Th were no complications attributable to the procedure and valuable information was obtained. The relation of the vascular displacements to the lesion are discussed and displacements of the middle cerebral group are shown to be roughly proportional to the total volume of the abscess.

British Journal of Urology, Edinburgh

23:197-292 (Sept.) 1951

Case of Cavernous Haemangioma of Bladder. E. W. Riches.—p. 204.
*Carcinoma of Urethra. E. W. Riches and T. H. Cullen.—p. 209.
Primary Carcinoma of Male Urethra. E. M. Nanson.—p. 222.
Case of Adenocarcinoma of Rete Testis. A. W. Badenoch and C. Dukes.—p. 230.
Purpura of Urogenital Tract. K. W. Martin.—p. 233.
Cutaneous Metastases from Renal Neoplasms. C. G. Scorer.—p. 250.
Malignant Transformation Following Orchidocleisis. D. W. Thomas.—p. 260.
Diffuse Pulmonary Lymphatic Carcinomatosis Due to Renal Carcinoma Showing Cytoplasmic Inclusions. C. F. Ross.—p. 263.
Pyrexia as Sole Presenting Symptom of Hypernephroma. B. C. Rowlands.—p. 267.
Two Cases of Urachal Cyst. J. G. Callanan.—p. 271.

Carcinoma of Urethra.—Riches and Cullen review observations on 34 patients with carcinoma of the urethra, who had been under their own care or that of their colleagues. It is slightly commoner in women than in men, and this series included 15 men and 19 women. The average age was 59 (54½ for men and 62½ for women). The authors believe venereal disease has been overemphasized in the etiology of this tumor; in their patients it was suggested only in the group of men with tumors of the bulbocavernosus. In four of nine cases there was a history of gonorrhea and of stricture in two of nine. Venereal disease has not been regarded as such a predisposing factor in females. The authors differentiate three well-defined groups of lesions: (1) those involving the anterior urethra in males and the urethral orifice in females; (2) bulbomembranous lesions in males and vulvourethral lesions in females; and (3) lesions associated with bladder growths. The survival rate was highest in the first group. It is stressed that in both sexes the more anterior the growth the better the prognosis. With tumors deep in the urethra the following factors are important: (1) Symptoms occur later or are unrecognized in the early stages. (2) Lesions are less accessible to treatment. (3) Metastases are commoner. A growth of the urethra demands examination of the bladder, and growth of the bladder, especially if it occurs near the neck, demands examination of the urethra. Metastases in inguinal nodes are common enough (50%) to warrant considering treatment either by removal or irradiation. Distant metastases occur in about one-third of cases. When a bladder growth invades the urethra the prognosis becomes worse because of the tendency to distant metastases. Radical surgery is applicable in a minority of cases but gives a good prospect of survival. Irradiation is necessary in many cases and provides excellent palliation in some. Tissue from any caruncle in the female or periurethral abscess in the male must be examined microscopically.

British Medical Journal, London

2:807-862 (Oct. 6) 1951

William Harvey and the Scholastic Tradition. J. Young.—p. 807.
Blood Cholinesterase Levels and Range of Personal Variation in Healthy Adult Population. S. Callaway, D. R. Davies and J. P. Rutland.—p. 812.
Blood Cholinesterase Levels in Workers Exposed to Organo-Phosphorus Insecticides. J. M. Barnes and D. R. Davies.—p. 816.
Failure of Oral D.D.T. to Induce Toxic Changes in Rats. G. R. Cameron and Kwok-Kew Cheng.—p. 819.
Preliminary Field Trials on New Schizonticide. H. M. Archibald.—p. 821.
Value of Gastric Biopsy in Study of Chronic Gastritis and Pernicious Anaemia. I. J. Wood.—p. 823.
Vitamin B_{12} in Megaloblastic Anaemia of Pregnancy and Tropical Nutritional Macrocytic Anaemia. S. Chaudhuri.—p. 825.
Outbreak of Respiratory Tuberculosis in a School. R. T. Bevan, P. T. Bray and J. F. Hanly.—p. 828.
*Surgery of Parotid Tumours: Exposure of Main Trunk of Facial Nerve. H. S. Shucksmith, T. M. Boyle and W. K. J. Walls.—p. 830.

Parotid Tumors and the Facial Nerve.—Willis is quoted as saying that 90% of all salivary tumors are pleomorph
and that, while most of these tumors grow slowly
to be well circumscribed, they are not entirely ben

lieves that the recurrence rate after inadequate operation may be as high as 62%, and that the principal etiological factor is the conservative type of operation used because of fear of damage to the facial nerve. Shucksmith and associates have not found Bailey's analogy of the facial nerve as the filling in a parotid sandwich of any value in removing parotid tumors, but their experience with facial nerve branches and filaments makes them accept McKenzie's analogy of the parotid growing like a creeper, weaving itself into the meshes of a trellis-work fence (the facial nerve). It seemed to them that the facial nerve could be preserved with wide resection of a superficial parotid tumor by exposing the main trunk of the facial nerve immediately above the stylomastoid foramen and then working forward to the main divisions and filaments as need be. This method is described briefly.

2:863-920 (Oct. 13) 1951

Chemical Manipulation of Food. E. Mellanby.—p. 863.
*Acute Tuberculous Septicaemia with Leucopenia. K. Ball, H. Joules and W. Pagel.—p. 869.
Acrosclerosis. S. C. Truelove and H. M. Whyte.—p. 873.
Acrosclerosis. A. S. Ramsey.—p. 877.
Abacterial Cystitis: Report of Three Cases and Isolation of Spirochaete from One. J. W. Czekalowski and G. O. Horne.—p. 879.
Value of External Cephalic Version Under Anaesthesia. D. Freeth and J. S. MacVine.—p. 881.
Mass B.C.G. Vaccination in a British Colony. A. W. W. Robinson.—p. 884.
A County B.C.G. Campaign. P. J. Burke.—p. 887.
Congenital Duplications of Small Intestine. J. C. Barrett.—p. 889.

Acute Tuberculous Septicemia with Leukopenia.—Three cases of tuberculous septicemia associated with leukopenia are reported. These occurred in two men, aged 54 and 56, respectively, and a woman, aged 47. They are compared with eight previously reported cases of this type. Chills, anorexia, and malaise were common symptoms. A high fever was always present and an enlarged spleen was often felt. Severe leukopenia without a striking relative neutropenia was the commonest finding in the blood. An aplastic anemia and a thrombocytopenia were also seen. The course invariably was rapidly downhill, with death occurring between 3 and 12 weeks after appearance of the first symptom. Acute tuberculous septicemia followed a fresh primary infection or a genuine reinfection in all three cases. At necropsy, multiple necrotic foci were seen in the liver and spleen in Case 1, but in Cases 2 and 3 no characteristic changes were grossly visible in any organ. In all cases histological examination revealed numerous necrotic foci containing acid-fast bacilli in many organs. It is considered that the occurrence of these organisms in the bone marrow accounts for the leukopenia and anemia. The difficulty in diagnosis lies in the absence of characteristic features in this disease. Examination of the bone marrow for tubercle bacilli is recommended. Streptomycin should be given a trial in a suspected case.

Bruxelles-Médical, Brussels

31:1961-2012 (Sept. 23) 1951

*Synergy Between Treponemicidal Activity of Bismuth and of Penicillin. C. Levaditi and A. Vaisman.—p. 1971.
Two Cases of Bivitelline Twin Pregnancies with Death of One Fetus. E. Spehl.—p. 1978.

Synergistic Treponemicidal Effect of Bismuth and Penicillin.—Rabbits in which syphilis was produced by subscrotal and intratesticular inoculation of fragments from primary syphilitic lesions of rabbits were treated with a bismuth-procaine preparation ("procrital") alone, with penicillin alone, or with a combined preparation made up by dissolving 100,000 units of penicillin in 1 cc. of "procrital." The latter compound contains 10.5 mg. of bismuth and 5 mg. of procaine per cubic centimeter. A dose of 2 to 5 mg. of bismuth (in the form of "procrital") per kilogram of body weight, induced rapid cicatrization of the scrotal syphilitic lesions and disappearance of the Treponema *palidum* from the blood in all the animals treated and ster
peripheral lymph nodes in 50%. A single dose of
penicillin induced rapid cicatrization of the
and even more rapid disappearance of the
blood but not from the peripheral lym
local recurrence was observed af

Synergy between bismuth and penicillin was apparent in that radical sterilization of the peripheral lymphatic system and disappearance of the spirochetes from the blood occurred in all the rabbits treated with the combined bismuth-penicillin preparation.

Clínica Tisiológica, Rio de Janeiro

6:125-258 (April-June) 1951. **Partial Index**

*Evolution of Allergy According to Schemes of BCG Oral Vaccination. J. Rosenberg, J. N. Aun and B. Macarron.—p. 125.

Allergy from BCG Vaccination.—The evolution of tuberculin allergy from oral BCG vaccination was observed in a group of ,460 newborn infants living with their parents, and 64 infants tween the ages of 10 days and 3 years living in creches or lums. The families of most of the infants were healthy, but some families there were tuberculous contacts. Newborn infants were given the vaccine by the following schemes: 1. A dose of 30 mg. of BCG vaccine was given to 491 infants every other day up to a total dose of 90 mg. during the first 10 days of life. 2. A single dose of 100 mg. was given during the first 2 weeks of life to 271 infants. 3. Intensive vaccination with a dose of 100 mg. was given every two weeks, up to a total of six doses to 117 infants, and every month, for six months to 580 infants. he older 65 infants had daily BCG vaccination in increasing ses from 10 to 100 mg. up to a total dose of 1,190 mg. in consecutive days. Serial Mantoux tests with dilutions up to :10 were made from one to two months after vaccination up to a period of two or three years. In newborn infants who were vaccinated by the first and second schemes the percentage of positive reactions was higher and the allergy was of longer duration than in infants who had more frequent revaccinations by the other schemes. A greater immunity was conferred by the more prolonged methods of vaccination, however, as is proved by the complete absence of tuberculosis in these infants, even those with tuberculous contacts. The results showed that allergy and immunity given by BCG vaccine are independent, that they are inversely proportional, and that the immunizing effect of BCG vaccine is not hindered when infants are in contact with tuberculous patients.

6:259-396 (July-Sept.) 1951. **Partial Index**

Evolution of the Laryngo-Tracheo-Bronchoscope. U. Pinheiro Guimarães. —p. 287.

*Radiological Frequency of Healed Primary Lesions in Non-Tuberculous Adults. R. Fernandes, F. Poppe and O. Reis.—p. 371.

Healed Primary Lesions in Nontuberculous Adults.—Examination of 1,802 x-ray films of nontuberculous adults in Rio de Janeiro disclosed 576 healed primary lesions. Almost twice as many of these lesions were on the right side as on the left. In a sample of 130 of these lesions 53.08% were located in the lower third of either lung, 33.85% in the middle third, and only 13.07% in the upper third. These relative proportions were compared with those found by earlier workers, both at autopsy and on examination of x-ray films, and the only difference noted was that in the present series lesions in the upper third of the left lung were slightly more numerous than those in the upper third of the right lung.

Deutsche medizinische Wochenschrift, Stuttgart

76:1229-1260 (Oct. 5) 1951. **Partial Index**

Endangiitis Obliterans: Concept of the Disease and Its Evaluation in Compensation Cases. N. Wolf.—p. 1229.

Significance of Capacity to Chew for Digestive Disturbances: Indication for Dental Prostheses. W. Kaufmann.—p. 1231.

Erythrocyte Sedimentation Rate, Weltmann's Coagulation Band and Cadmium Sulfate Reaction in Patients with Neurologic Disorders. B. Folkers and S. Moebius.—p. 1234.

*Radioactive Phosphorus in Treatment of Polycythemia. W. Horst and H. Sauer.—p. 1237.

Radioactive Phosphorus in Polycythemia.—Horst and Sauer review their experiences with radioactive phosphorus treatment in eight patients of whom six had polycythemia with erythrocyte counts between 7,000,000 and 8,000,000. Four of them had been treated previously for several years with phenylhydrazine or venesection, the other two received radioactive phosphorus from the beginning. All but one of the six responded favorably to the isotope, which is injected intravenously in isotonic sodium chloride solution. Treatment is usually begun with 0.06 mc. kilogram of body weight and may be repeated after three mor if necessary. A fall in erythrocyte counts was usually evid after from four to five weeks. Treatment with radioactive ph phorus is more beneficial than fractionated whole body roent irradiations, chiefly because of greater selectivity. Irradiat therapy inhibits the bone marrow, whereas venesection hemolysis with phenylhydrazine stimulate medullary activ Advantages of treatment with radioactive phosphorus are a creased tendency toward development of thrombosis and avc ance of roentgen intoxication. The gradual reduction in quantity of blood is of advantage in patients with circulat impairment. Complications like temporary anemia, leukope and thrombocytopenia are usually not dangerous and no irr ation-induced changes could be demonstrated in the parenchy organs. There is no proof that polycythemia is more likely be followed by leukemia during treatment with radioactive pl phorus than with other treatments.

76:1261-1292 (Oct. 12) 1951. **Partial Index**

Leading Viewpoints for Treatment of Recent Intracranial Inju F. Loew.—p. 1261.

Late Damage Caused by Deficient Nutrition, and Circulatory turbances. K. E. Vogt.—p. 1265.

*Treatment of Marchiafava Anemia; Transfusion of "Washed" Eryt cytes. H. Schubothe and M. Matthes.—p. 1274.

Marchiafava Anemia.—The superiority of washed erythro transfusions over whole blood transfusions in the treatment Marchiafava's chronic hemolytic anemia is demonstrated in following two case histories. In one patient with this dis whole blood transfusions appeared to be harmful rather t beneficial. After each of eight weekly transfusions of 32 400 cc. of whole blood from a donor with the same blood gro the patient felt extremely weak, the nocturnal hemoglobin was increased, and there was occasional diurnal hemoglobinu The patient's erythrocyte count decreased during the treatm from 2,000,000 per cubic centimeter before the first transfu to 800,000 per cubic centimeter after the last transfusion gradual increase in the erythrocyte count occurred after transfusions had been discontinued. The second patient like had continuous hemoglobinuria and a decrease in erythro count while receiving whole blood transfusions, with an incr in the erythrocyte count after the transfusions were stop Six months later an exacerbation reduced his erythrocyte c to 800,000 per cubic centimeter and his hemoglobin to 1 Transfusions of erythrocytes washed in isotonic sodium chlo solution corresponding to 3½ liters and 1.2 liters of whole bl respectively, were given for six days, and after an interva two months, for two more days. These transfusions were tolerated; within six days the total number of erythrocytes creased from 800,000 to 4,000,000 per cubic centimeter. T months after the last washed red blood cell transfusion erythrocyte count was 2,500,000 while two months later it 2,300,000. Because causal treatment of Marchiafava anemia not yet been possible, and other therapeutic trials have fa blood transfusions are of decisive importance. In these pati the hemolytic reactions precipitated by whole blood transfus were apparently due to a component of the donor's serum enhanced the specific hemolytic mechanism of Marchia anemia. These reactions were prevented by transfusions washed red blood cells. This method seems to be indicated i cases in which intolerance to the donor's blood depends plasma factors, and in cases that require a rapid and pronou increase in number of erythrocytes.

Glasgow Medical Journal

32:257-282 (Sept.) 1951

Convulsions in Childhood and Their Relation to Epilepsy. R. A. Sh —p. 257.

Management of Pregnant Tuberculous Diabetic. J. P. McIntyre W. H. D. Scotland.—p. 268.

Preliminary Survey of Dysphagia Due to Malignant Disease. S. Y and J. C. Watt.—p. 273.

Convulsions in Childhood and Epilepsy.—Shanks believes lated convulsive episodes in childhood differ from recurrent s taneous convulsions of epilepsy only in degree. Sharp distinct cannot be made between types of convulsions, which ra rom the isolated fit to uncontrollable epileptic seizures. With he striking fall in the incidence of rickets in the last 25 years here has been an equal decrease in the incidence of tetany and pasmophilic diathesis. The concept of a variable convulsive hreshold which depends on the interrelation of constitutional nd external factors is discussed with regard to "casual" conulsions and epilepsy. Spontaneous convulsions are more likely o recur than those associated with infection, but this can be nly a rough guide to the prognosis of an individual case. If all nfantile convulsions are considered, the recurrence rate is about 2%. This reassuringly low figure should be remembered in egard to any first convulsion in a child. A convulsion associated with febrile illness is likely to be benign if it occurs at the nset; a fit which occurs during the course of an acute infection, nless it is agonal, suggests either the onset of a complication r that recurrence is likely. The author stresses that under favorble conditions epilepsy is preventible. Uncontrolled convulsions ead in themselves to progressive mental impairment. It follows hat no child or adult should be allowed to have repeated fits without energetic attempts to control them. It is better to use henobarbital unnecessarily than to wait until repeated fits have onfirmed the diagnosis. The control of epilepsy by adequate herapy is second in importance only to prevention by prompt nd persistent treatment of convulsions in early life.

Hospital, Rio de Janeiro

40:327-490 (Sept.) 1951. **Partial Index**

Involvement of the Pericardium in Hodgkin's Disease. Q. H. de Mesquita. —p. 327.
Surgical Diseases of Thyroid Gland. R. A. Dos Santos.—p. 469.

Pericardium Involvement in Hodgkin's Disease.—Only 27 cases in which Hodgkin's disease involved the heart have been reported, including that of the 15-year-old girl observed by the author. Her illness began in 1945, when painless swellings appeared in her neck and left axillary region. Medical treatment failed, but radiotherapy brought about great improvement which lasted for three years. A tumor mass then appeared at the level of the upper third of the sternum and rapidly increased in size. Swelling also recurred in the left axillary region. The patient had lost about 7 lb. (3.2 kg.) in the two months before she was seen by the author in 1948, and suffered from dyspnea on exertion. A diagnosis of Hodgkin's disease with pericardial effusion was made and treatment with nitrogen mustard begun. Daily doses of 4 mg. were given by rapid intravenous injection for four consecutive days, or a total dose of 16 mg. for a body weight of 115 lb. (52 kg.). Some distress was caused by the treatment, and the patient lost about 15 lb. (7 kg.) in the 12 days following the first injection. She began to improve at the end of the second week; her weight increased, the swellings diminished until they were scarcely perceptible, and the pericardial effusion was reabsorbed. Her condition fluctuated during the next 14 months, deteriorating rapidly toward the end, with invasion of the left lung and recurrent pericardial effusion, which produced a fatal hypodiastolic cardiac insufficiency.

Thyroid Diseases Treated Surgically.—Dos Santos reports on 80 cases of thyroid disease treated by subtotal thyroidectomy. Preoperative preparation of patients with severe hyperthyroidism consisted of propylthiouracil until the patient's condition showed a clinical improvement and the basal metabolism was reduced to +30% at the maximum. General measures, such as rest, hydration, special diet, administration of vitamins, and correction of deficiencies, were also employed. Lugol's solution was given in the 10 days preceding operation. It was used alone in cases of less severe hyperthyroidism, and in cases of nontoxic goiter to prevent development of toxic goiter and to improve its condition for surgery. Preoperative treatment of patients in Rio Preto (Brazil) is often complicated by anemia and verminosis. Patients who have been well prepared for operation are usually discharged on the third or fourth day. Part of the clips are removed 24 hours after operation; in 48 hours all the clips and the drain have been removed, insuring an inconspicuous scar. Dos Santos uses local anesthesia almost exclusively, preceded by medication with morphine, atropine, and secobarbital (seconal®). Local anesthesia is preferred because it facilitates checking of the function of the recurrent nerve by speech. When this nerve or one of its branches is injured or caught in a ligature, it may lead to a temporary paralysis of the vocal cords. Such transient lesions of the recurrent nerve were the principal postoperative complications, and there were no cases of severe hemorrhage or postoperative tetany. Hypoparathyroidism occurred in two cases. There was one death, which was attributed to the anesthesia.

Irish Journal of Medical Science, Dublin

309:393-440 (Sept.) 1951. **Partial Index**

Chemotherapy in Urinary Tuberculosis. T. J. D. Lane.—p. 393.
Carcinoma of Cervix. O. Chance.—p. 406.
Cold Vasoconstriction and Vasodilatation. A. D. M. Greenfield, J. T. Shepherd and R. F. Whelan.—p. 414.
Electrocardiographic Changes Following Mitral Valvulotomy. S. P. O'Toole.—p. 427.
Fibrocystic Disease of Pancreas. E. E. Doyle and P. N. Meenan.—p. 432.

Lancet, London

2:601-646 (Oct. 6) 1951

Practice and Consequences of Splenectomy. H. C. Edwards.—p. 601.
*Early Rising in Obstetrics and Gynaecology. W. F. T. Haultain and D. J. McI. Irvine.—p. 607.
Pharmacology of Bis 3-3'-(4 Oxycoumarinyl) Ethyl Acetate (Tromexan). M. Stirling and R. B. Hunter.—p. 611.
Calciferol, Streptomycin and Para-Aminosalicylic Acid in Pulmonary Tuberculosis. J. Fielding and J. J. Maloney.—p. 614.
Case of Eclampsia Treated with Hexamethonium Bromide. C. J. Penny and R. P. W. Shackleton.—p. 617.
Recovery After Poisoning with Di-Nitro-Ortho-Cresol. A. B. Pollard and J. F. Filbee.—p. 618.
Antithyroid Activity of 2-Carbethoxythio-1-Methylglyoxaline. A. Lawson, C. Rimington and C. E. Searle.—p. 619.

Early Ambulation in Obstetrics and Gynecology.—Early ambulation was practiced in 1,070 consecutive obstetric cases, in 28 cases of cesarean section, and in 285 cases in which major abdominal and vaginal operations were performed. The patients were allowed to get up usually within 24 hours of, and not later than 36 hours, after delivery or operation. This seemed to be beneficial to them and no untoward complications occurred. There was no morbidity in private puerperal cases and the morbidity in the hospital puerperal cases was 0.4%, which is extremely low for a hospital admitting both emergency and scheduled cases. Early ambulation did not interfere with the healing of the perineum, and involution seemed to be accelerated. The presence of red lochia may possibly be prolonged. In cases of pelvic-floor repair healing was not hindered by early ambulation, and catheterization was needed far less often. Sickness, flatulence, and distention seemed to be relieved. The decrease in use of bedpans was appreciated by both patient and nurse. Though early ambulation is advocated for hospitalized puerperal women it may be contraindicated for obstetrical patients in their homes. In the hospital, the fact that the patient is allowed up early should not shorten her hospitalization during the puerperium; she needs rest, supervision, and freedom from household worries, which could not be obtained at home. In hospital early ambulation seems to be beneficial not only to the puerperal patient but even more so to the patient who has undergone a major operation.

Calciferol, Streptomycin, and *p*-Aminosalicylic Acid in Pulmonary Tuberculosis.—Seven patients with pulmonary tuberculosis in whom gross cavitation was present on admission were treated with streptomycin, *p*-aminosalicylic acid, and calciferol. Streptomycin hydrochloride was given in doses of 0.5 gm. twice a day and sodium *p*-aminosalicylic acid in doses of 16 gm. per day in four divided doses of 4 gm. Calciferol was given in doses of 600,000 units in oil once a week intramuscularly for three weeks, followed by two doses at two week intervals and an additional 600,000 units every four weeks until nine doses had been given, a total of 5,400,000 units in five to six months. Of the 5,400,000 units, 2,400,000 were given in the first month. The principle followed was that, when pronounced activity of the disease was shown by rise of temperature, streptomycin and *p*-aminosalicylic acid were given first and calciferol was added shortly afterward; when there was little or no rise of temperature, administration of all three drugs was started at once. Three patients who received the full course of calciferol with *p*-amino-

0.25 gm. of carbarsone three times a day for four days and 1 grain (60 mg.) of emetine twice a day for three days should be considered sufficient for therapeutic trial.

AMENORRHEA FOLLOWING ACCIDENT

To the Editor:—*A girl, aged 14, was struck on the left leg by an automobile in May, 1950. While the trauma was trivial, she has not menstruated since that time. Menses began at age 12 and were regular and normal. In August, 1950, she began to notice a gain in weight and height; by March, 1951, she had gained 5 in. (12.70 cm.) in height and 50 lb. (22.7 kg.) in weight. In April, 1951, she weighed 196 lb. (88.9 kg.) after going on a self-imposed diet. Her weight at the time of the accident was 176 lb. (79.8 kg.). Her present height is 69½ in. (175.26 cm.). Physical examination revealed no abnormalities. Fat distribution is normal. Basal metabolic rate is +14%. Except for obesity and gain in weight, the only symptom is nervousness. Is there any relation between the accident and the amenorrhea and the gain in weight and height?*

M. David Deren, M.D., Bridgeport, Conn.

Answer.—The evidence presented in this case is reminiscent of the old classification of hypogonadal obesity, in which failure of the ovaries was considered to be the responsible factor for the gain in weight. There is little or no evidence of a scientific nature, however, that absence of ovarian function, per se, can cause an accumulation of fat. This girl probably has a constitutional or personality predisposition to obesity, since she was considerably overweight at the time of the accident. Often, a slight trauma or illness can precipitate the accumulation of weight by upsetting the emotional equilibrium. The amenorrhea may also be on a psychosomatic basis following the trauma. It is difficult to determine the cause of the rapid increase in height from the data presented. Treatment should, of course, primarily be directed toward reduction of weight. There is a good possibility that the menstrual periods may return spontaneously with adequate weight reduction. If this does not occur, however, there is a possibility of some endocrine disturbance with a resulting ovarian failure. This condition will require exploration from the endocrine standpoint, such as hormonal bioassay, vaginal smears, and other suitable tests. In the process of weight reduction, it is suggested that the patient be supported with appetite-curbing medication, such as the amphetamines, since in this case it will apparently be rather difficult to obtain a satisfactory weight reduction with simple diet management.

CEREBRAL VASOSPASTIC EPISODES

To the Editor:—*A 50-year-old manager of a aepartment store began having intermittent spells in which his right arm and leg would become numb and partly paralyzed; he also had partial aphasia. Two weeks before the attack, he passed an insurance examination with all negative findings, including normal electrocardiogram and laboratory tests; the blood pressure was 138/84. He had been under emotional tension, frequently working overtime, smoking 30 cigarets daily, and taking two* d-*amphetamine sulfate (dexedrine®) tablets to curb his appetite. What is the etiology of the cerebral angiospasm, as well as the prognosis in this patient, who has no neurologic sequelae? It is now five weeks since his attack; he is able to take short walks but fatigues easily. He is receiving multivitamins and papaverine hydrochloride and has been told to increase his physical activities.*

M.D., New York.

Answer.—The picture is that of a cerebrovascular episode involving the left half of the brain, probably cortical in view of the fact that aphasia developed. It is not at all surprising that results of his previous examination were normal. None of these could in any way portend the development of these vasospastic episodes. The intake of an amphetamine preparation and possibly the smoking could have played a precipitating role in the development of the angiospasm. Probably tension was the most serious factor. Early episodes have left no residue, but repetition of these attacks will ultimately produce an area of softening which may be the site of the subsequent vascular accident or which may be the precursor of an irreversible hemiplegia or aphasia. It is common in the postmortem examination of the brains of such persons to find multiple areas of softenin which there was no clinical evidence. These sites are the sig ture of the attack mentioned in your description.

Avoidance of business worries and family tensions is imp tive. Sedative drugs, like phenobarbital, and antispasm drugs, like papaverine, are useful. There would seem to be n use for vitamins here. Normal physical activities, avoiding e cesses, are not interdicted.

MENSTRUATION AT THE MENOPAUSAL AGE

To the Editor:—*On page 360 of* The Journal *of Sept. 22, 1951 the answer to the query about menstruation at the men pausal age seems inadequate. The intimation that most wom with frequent or heavy menstrual periods require no inv tigation is misleading. It is not normal for uterine bleedi to increase in amount in the premenopausal period. Wom with bleeding sufficiently profuse or otherwise deranged make them seek medical advice certainly merit curettage f diagnostic purposes; fortunately the curettage often may ha therapeutic value as well. This is particularly true when th diagnosis is endometrial hyperplasia, endometrial polyp, irregular (delayed) shedding of the endometrium. While a occasional submucous myoma may be removed with a cur most of these will require removal of the uterus for adequa control of bleeding. The important thing to remember that there are few, if any, unexplainable derangements bleeding from the endometrium and that a clear-cut dia nosis can be made if one will take the trouble to proce along well-charted paths. Obtaining and recording an c curate history is the first prerequisite, and correlating hi torical data with histopathological evidence is most importan When the diagnosis has been made, treatment usually b comes obvious. However, it seldom takes the form of remo ing the uterus through the vagina—as has been suggested the answer previously published—unless this is to be done part of a procedure to repair the remote results of childbir trauma. Vaginal hysterectomy in the absence of descens or prolapse is not an operation to be undertaken lightly the occasional operator.*

Charles E. McLennan, M.D.,
Stanford University School of Medicine
2398 Sacramento St.
San Francisco, 15.

BOWEL DISTURBANCE AND DIABETES

To the Editor:—*In the answer to the query on "Bowel Di turbance and Diabetes"* (J. A. M. A. **147:**796 *[Oct. 20] 1951 there was one possibility that was not considered, namely, t coincident failure of the acinar portion of the pancreas. Shiel Warren in "Pathology of Diabetes Mellitus" (Philadelphi Lea & Febiger, 1930) reports varying degrees of fibrosis the acinar portion in about half of 300 cases coming to a topsy. The functional failure is obviously not as common b may occur.*

In May, 1951, Dr. John Henkin and I studied a case simil to the one described in The Journal. *The patient, age 62, h had diabetes for 23 years, controlled by 56 units of insu per day. The diarrhea began gradually about November, 19 There was a continuous and progressive loss of weight, to 20 lb. (9 kg.). Stools averaged four to six each morni Despite an increase in food and decrease in insulin, th were increasing numbers of insulin reactions. X-ray stud of the gastrointestinal tract were normal. A flat x-ray of abdomen showed calcified areas in the region of the pancre The stools contained undigested fats but no parasites blood and no pancreatic enzymes. Blood studies revealed o a low serum amylase level (29 mg.).*

Treatment was begun about May 10 with pancreatin, th panteric® tablets after each meal and two at bed time. T patient has gained 10 lb. (4.5 kg.). Diarrhea ceased withi few days but recurs with any irregularity in taking pancrea

Charles T. Maxwell, M.D.
319-321 Frances Bldg.
Sioux City 8, Iowa.

THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 4

CHICAGO, ILLINOIS
COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION
JANUARY 26, 1952

CANCER OF SKIN AND OCCUPATIONAL TRAUMA

John Godwin Downing, M.D., Boston

Occupational cancer is an injury arising out of and in the course of employment. Such an injury has been recognized in Europe for centuries, and its occurrence has been duly reported and recorded. In the United States, however, apparently it is rarely recorded. At least in Massachusetts it is almost impossible to find a record of this type of injury in the various departments which should be interested in it.

Perhaps such cancers in the United States are rare. After 25 years of experience in reviewing many thousands of claims for compensation, I have been able to find only a few claims for compensation for occupational cancer. In the first 2,000 cases reviewed by me, only six patients made such claim, and not one presented sufficient evidence to substantiate it.[1] However, the fact that only rarely does a worker make such a claim suggests that he may have good reason for it, and his claim should be thoroughly investigated. Workers frequently know the hazards of their occupation long before their employers recognize or accept them. This was demonstrated among the Schneeberg and Joachimsthal miners, who knew that after each discovery of a rich uranium vein the number of cases of carcinoma increased.[2]

In workers exposed to soot, pitch, tar, and shale oil occupational cancer of the skin is liable to develop. After prolonged heat or overexposure to roentgen rays there frequently follows cancerous degeneration of the skin, most often of the face, hands, and scrotum (Fig. 1). The recognition of cancer of the skin is simple. Clinical examination confirmed by biopsy report should eliminate any uncertainty about the diagnosis. The facts necessary to complete the picture can be obtained by taking a careful history. Physicians expressing an opinion regarding a claim for compensation for patients with occupational cancer should investigate not only the most recent occupation but all previous exposures to possible carcinogens.

Representatives of American industry, both laymen and physicians, resent the implication that cancer could be incurred in their industry. As a result, insurers fall back on scientific research, which has failed to solve the mystery of the causation of cancer. This is a natural reaction. First of all, the possibility of acquiring cancer in an occupation might deter workers from engaging in it. The publicity attendant on the acceptance of even one claim of cancer in an industry might cause numerous subsequent suits, and, lastly, a more probable but unjustifiable reason would be the increased expense incurred by perfecting protective measures to prevent the possible occurrence of even one case among thousands of workers. In some industries this would entail the expense of entirely rebuilding the plant.

The lack of investigation and early recognition of serious occupational hazards, resulting from the preceding reasons has impeded the progress of industrial medicine. It is apparent in the study, control, and prevention of occupational health hazards, especially as regards occupational skin cancers, that the United States is not on a par with other countries. Lack of recognition of the importance of industrial skin cancer stands out in sharp contrast to the unrestricted and wide publicity given this important matter in England, Germany, and Switzerland, where these cancers are notifiable and compensable diseases, and information regarding them, therefore, is relatively reliable. The history of industrial medicine here is full of failures to prevent the unnecessary deaths in industry that have occurred, for example, from berylliosis of the skin and lung, cancer of the lung from chromates, tumors of the bladder due to aniline dyes, osteogenic tumors from radioactive chemicals, and cancer due to carcinogens in the tar industry. All these industrial hazards could have been controlled or eliminated.

A cancer allegedly due to occupation may get out of control before it receives proper treatment, owing to the employee's financial inability to secure medical care or because of the time wasted in litigation. As a result, the patient may undergo unnecessary suffering and even loss

---

Read before the Section on Dermatology and Syphilology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

Professor of Dermatology and Syphilology, Tufts College Medical School; Physician-in-Chief for Diseases of the Skin, the Boston City Hospital; Professor of Dermatology, Boston University School of Medicine; and Dermatologist-in-Chief, Massachusetts Memorial Hospitals.

[1] Downing, J. G.: Cutaneous Eruptions Among Industrial Workers: A Review of 2,000 Claims for Compensation, Arch. Dermat. & Syph. **39**: 12-32 (Jan.) 1939.

[2] Franseen, C. C.: *Cancer: A Manual for Practitioners*, Ed. 2, New York, American Cancer Society, 1950.

of life. Even today the injured employee must take the initiative and prove that such a hazard exists. Despite teaching and the writings of physicians specializing in this work, there are still too many part-time physicians employed in industry who are interested only in the repair of wounds, hernias, and fractures and who know little or nothing about the occupational hazards of the plant for which they are responsible. Often it is not until repeated calamities have occurred that a plant is investigated for possible hazards. Although the employees have learned by bitter experience or from the suffering of fellow employees the dangers of the work, often the employers will blindly refuse to face the issue and attempt to deny their responsibility. All dermatologists should realize the possibility that occupational cutaneous cancer, although rare, can and does exist.

A review of the literature reveals numerous contradictions. Salter [3] asserts that despite a wealth of data indicating carcinogenesis in man from crude mixtures, only three unadulterated agents have thus far been proved carcinogenic for man: radiation, betanaphthylamine, and arsenic. He states that chemical compounds which are outstanding carcinogens in rodents have usually proved ineffective in other species and have not been shown to be effective in man. Therefore, carcinogenic activity in rodents should not be used as a criterion of possible danger to man, nor should its absence in rodents be regarded as valid evidence of safety for human workers. Morton,[4] on the other hand, states the number of known chemical carcinogenic agents is large. There is no evidence that a definite chemical structure is necessary for carcinogenic activity. These chemicals vary from simple acids and alkalis (HCl, NOH), metal salts ($ZnCl_2Zn$ SO_4), radioactive compounds (colloidal thorium dioxi [thorotrast®]), and sugars (dextrose) to complicated d (dimethylaminoazobenzene), hydrocarbons (3:4 ben pyrene, 1:2:5:6 dibenzanthracene, methylcholanthren estrogens (complicated sterols), and viruses (heavy p teins).

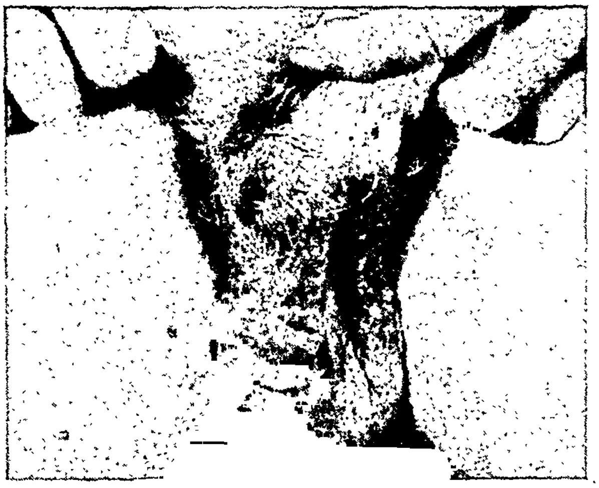


Fig. 1.—Janitor, 82, with epidermoid carcinoma of scrotum. This man was a mule spinner in England for many years. (By permission of Dr. F. Ronchese.)

Hueper [5] considers tar produced in high-temperat retorts from coal to be usually carcinogenic, whereas from low-temperature retorts less so or not at all. Wo tar, often used medicinally, is usually noncarcinogen Some crude mineral oils containing originally aroma substances are carcinogenic, but mineral oils com from other fields and having a different composition not. It is apparent that much of the evidence by which causation of cancer is connected with occupational acti ties is circumstantial and that in only relatively few ty of occupational cancers is definite and specific evide available.

Hueper [6] further states that the rapid growth of m ern industry and its vast diversification during the five decades have been accompanied by a considera rise in the number of industrial cancers and by the appe ance of many new types. Certain types of indust cancer, which in the past were observed exclusively European plants, have made their appearance in Am can factories.

According to Warren,[7] even new elements have b discovered, among which is plutonium, which is tum genic in animals. Consequently, the hazards are especi high in this new field of atomic energy for the resea workers, who are likely to be careless of their own sa and, without realizing it, the safety of others. Practic all occupational tumors are malignant when fully de oped. It is improbable [6] that any occupational can of the skin or lungs and leukemias would be found to among the many persons who came in contact du recent years with radioactive gases and dust, becaus much longer latency period is required in general be such complications become manifest. However, all sons who have sustained such exposures should rem under close supervision for the next 20 or 30 years.

Occupational cancer tends to occur in younger wo ers. Evidence of the occupational origin may be because of continued change of occupation. Accor to Hieger and others,[8] the minimum interval of before the appearance of epithelioma in tar and p workers is eight months, and the maximum time repo is 73 years. Hueper [6] states that it is the patient's ag onset, together with the duration and intensity of ex sure, that determines the age at which occupatio cancers are manifested. Depending on these factors, dustrial cancers have been observed in persons betw 10 and 80 years old. Observations of occupational cers show, moreover, that in some persons onl comparatively short exposure time (6 to 12 months necessary for the development of aniline cancers of bladder or chromate cancer of the lungs.

It is now recognized that certain chemical carcinog once thought to cause cancer of the skin alone, produce cancers elsewhere. Among them are tar, min oil, radioactive chemicals, and arsenic, which have ca cancers of the lung, nasal sinuses, bones, and hemopoi tissue.[9]

---

3. Salter, W. T.: Chemistry of Carcinogens, Occup. Med. 5: 441-465 (May) 1948.

4. Morton, J. J.: The Present Status of Carcinogens and Hormones in Cancer Research, Surg., Gynec. & Obst. 72: 345-362 (Feb. 15) 1941.

5. Hueper, W. C.: Clinical Aspects of Occupational Cancer, Occup. Med. 5: 157-165 (Feb.) 1948.

6. Hueper, W. C.: Significance of Industrial Cancer in the Problem of Cancer, Occup. Med. 2: 190-200 (Sept.) 1946.

7. Warren, S.: Pathologic Aspects of Occupational Tumors, Occup. Med. 5: 249-251 (March) 1948.

8. Hieger, I.; Henry, S. A.; Ross, P., and Winternitz, J. G.: Symposium —Industrial Skin Cancer, with Special Reference to Pitch and Tar Cancer, Brit. J. Radiol. 20: 145 (April) 1947; abstracted J. Indust. Hyg. & Toxicol. 30: 7 (Jan.) 1948.

9. Heller, J. R., Jr.: Chemical Carcinogens, Arch. Indust. Hyg. 2: 390-399 (Oct.) 1950.

Salter[3] believes that at present the only valid type of evidence of danger of carcinogenesis in man is carefully analyzed epidemiological data. This opinion is confirmed in a paper written by Ingalls,[10] who states that chimney soot was first associated with an occupational cancer of the scrotum observed among chimney sweeps by Percival Pott around 1775. Ingalls' study was planned to determine whether an industrial hazard of cancer did in fact exist in the manufacture of carbon black, a commercially produced form of soot. In the United States the term "carbon black" customarily refers to the specific product of the incomplete combustion of natural gas or oil; but confusion may arise as to the meaning of the term, for in Europe "carbon black" is frequently used synonymously for the dangerous soot. Commercial carbon black is an industrial soot composed of colloidal-sized carbon particles produced for some 70 years by the controlled incomplete combustion of natural gas and in the last 4 years, of oil residues. In a company employing on the average 476 carbon-black workers annually, one man died of cancer of the stomach during the 10 years between 1939 and 1949, and in two others cancer of the skin developed in the 5 years between 1944 and 1949. The observed death rate from cancer among carbon-black workers (0.21 per 1,000 per work year) is low as judged by rates observed among other comparable groups of the industrial and general population. The morbidity rate of one new case annually per 1,000 workers per work year is likewise low and no higher than expected. The available clinical and epidemiological evidence indicates that the carbon-black worker faces no more than the ordinary risks of cancer encountered by other groups of the male working population.

Snegireff and Lombard[11] in a discussion of arsenic and cancer state that the theory that arsenic may cause cancer dates back 130 years to the writings of Paris. The suspicion still appears to exist that arsenic may cause cancer in healthy persons. It is impossible to escape contact with arsenic, which has always existed in nature and for generations has been ingested by our ancestors, even as it is in our civilized society today. The data from the arsenic and control plants located in the continental United States were regrouped for comparison with the corresponding population and mortality data available from published official reports of the United States Bureau of Census and the United States Public Health Service. The data were subjected to statistical tests for the determination of their significance. In each plant volunteers who had worked with arsenic for many years were physically examined and interviewed in the presence of the plant physician or a responsible member of the administrative staff. As a result of these inspections, Snegireff and Lombard conclude:

> Today in the light of our growing appreciation of the importance of chemical compounds as specific agents each endowed with characteristic biologic properties, which are not to be taken for granted as being limited by group characteristics, and with a growing insight into the complex relationships of the multiple factors required to "spell" cancer, we are impressed by the unavoidable—that in some men who work in arsenic industries cancer will develop. There is, however, reasonable doubt that some arsenical compounds will cause cancer. In our study of plant A, where large amounts of arsenic trioxide are handled, we found a slightly higher proportionate mortality from cancer among the employees than in the state-adjusted figures. But the same was found true of plant Z, where arsenic is not handled but where the other factors are comparable. On the basis of evidence examined in this preliminary survey, we conclude that the handling of arsenic trioxide in the industry studied does not produce a significant change in the cancer mortality of the plant employees; hence, other factors in addition to arsenic must be considered significant in the causal relationship to cancer.

These two papers[12] were submitted to a trained statistician who specializes in medical statistics, and he commented that while the figures were mathematically correct, the data presented were too small to justify any definite conclusion.

OCCUPATIONAL SKIN CANCERS

The recorded number of occupational cancers of the skin in the United States is very small. A recent report shows that there were 71 tar and pitch cancers, 62 grease and oil cancers, 45 roentgen cancers, and 18 arsenic cancers. Needless to say, the majority of tar and oil cancers have not been reported, while the long latent period of arsenic cancer may account in part for the small number of reported cases due to arsenic.[5] I have observed three tar cancer cases in my private practice, despite the fact that there is very little of this type of work done around Boston. There being no authorized agency to which to report these cases, there is no public record of them. I am sure that the same thing occurs throughout the United States. If all cases were reported, the number would be larger. The following is a typical case.

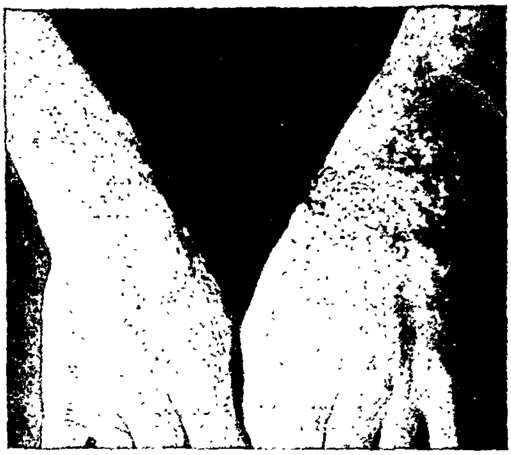


Fig. 2 (Case 1).—Patient with tar cancer who worked as coal-tar distiller for 48 years.

Case 1.—T. G. L., a man, 68, worked as a coal-tar distiller for 48 years (Fig. 2). The tar was collected in barrels from gas companies and poured into tanks and stills, under which there was a fire to heat the tar. At this time considerable tar would get on the patient's hands, and he was also exposed to extreme heat from the fire. The barrels frequently leaked so that it was necessary to use various distillates to remove the tar from his hands. He did not take any precautions while working. Later the distilling was done by an enclosed method, but this also involved slight handling of the tar. Eighteen or 20 years previously the patient noticed "warts" on his hands, which he removed with corn solvents. Later on lumps, which he called "pearls," appeared and broke down into sores. Over a period of years he received various types of treatment. When seen on Feb. 9, 1940, he showed a large ulcerated area with a ragged serpiginous border. This involved half the dorsum of the hand and extended for 1 in. onto the wrist. Clinically it was a typical epidermoid carcinoma with ulceration. There was no enlargement of the axillary glands. He also showed numerous keratoses and patches of erythema and atrophy of the exposed areas of the skin. On March 30 the area on the hand and wrist was excised, and the pathological report was Grade I epidermoid carcinoma. Various other warts and keratoses were excised at the same time, and all areas were skin-grafted, with successful healing. From time to time new lesions were excised. In 1941 this patient died as a result of a heart attack. The commissioner approved payment of $1,200 for medical expenses. The patient received full wages from his employer until his death, but no compensation for his suffering and disfigurement.

---

[10] Ingalls, T. H.: Incidence of Cancer in the Carbon Black Industry, Arch. Indust. Hyg. 1: 662-676 (June) 1950.

[11] Snegireff, L. S., and Lombard, O. M.: Arsenic and Cancer (Observations in the Metallurgical Industry, to be published.

[12] Ingalls.[10] Snegireff and Lombard.[11]

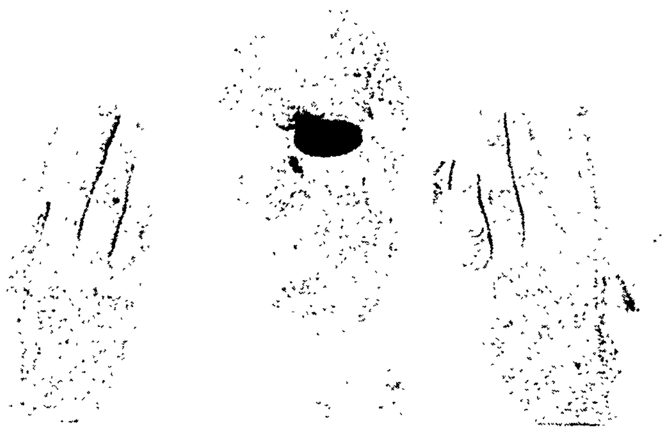


Fig. 3.—Gardener for 30 years who frequently used arsenic sprays.

As regards cancer from arsenic, I have had several outdoor workers, especially those who spray arsenic compounds, who had on their hands numerous keratoses, the precursors of cancer.

Case 2.—P. J. R., a man, 60, worked as a gardener for 35 years and often used an arsenic spray. In April, 1949, after a slight injury to the left first interdigital space, he received a wound which persisted until the following December, when the area was excised, with a pathological diagnosis of basal cell epithelioma. On examination Feb. 5, 1950, the patient showed marked scaling of the lips and keratoses and telangiectasia of the face, especially the central area, the nose, and the rims of the ears. There was also a small *epithelioma* at the base of the left third finger. The left first interspace, the site of previous operation, showed a recurrence of the previous lesion. This patient in my opinion showed the effects of outdoor work and contact with irritants such as arsenic.

The preceding case supports the statement of Hueper [5] that there is no doubt that arsenical occupational dermatoses and hyperkeratoses are not uncommon among various types of workers (loaders and packers of arsenic compounds, cotton-field workers, vineyard workers, and workers in arsenic plants [Fig. 3]).

In this same paper Hueper includes the report by Schwartz and Tulipan of the occurrence of epitheliomas in 5 out of 100 workers employed in the manufacture of electric conduits covered with pitch-impregnated paper. He states further that although Jonas reported the occurrence of numerous cases of creosote burns in workers creosoting wooden blocks and in construction workers handling creosoted lumber (Fig. 4), no case of creosote cancer of the skin was recorded in the United States. Perhaps the following may be the first such case.

Case 3.—W. G., a man, 46, worked with coal-tar distilla for 23 years checking oil-operated heaters, which distilled vario materials, such as creosote and carbolic acid. The plant former used an old-fashioned black kiln to distill creosote and phen from crude coal tar. Later an enclosed process was installed, b it was still necessary to inspect tanks. As the work was done fro overhead, the patient was constantly exposed to heavy fumes th penetrated his clothing. Oil often spilled on his face, causi burns and soiling his clothing. Once he fell into a condense creosote soaking his clothes to the waist. Severe redness a peeling of the skin developed. In January, 1946, he noticed the left part of the scrotum a small, horny growth which i creased in size. It was excised three months later. The path logical diagnosis was epidermoid carcinoma. He also show follicular plugging of various other parts of his skin and a bas cell epithelioma on the left ear. Later several inguinal nodes a peared, and on April 26 he had a radical dissection of the l groin. The pathological report showed metastatic epidermo carcinoma in two of the five nodes examined. He was discharg as relieved. This case was accepted with a total expense $1,326.31, compensation totaling $563.50 and medical expen $762.81. This man returned to the same work, and the last no in his record, dated July 30, 1947, showed that he was apparent cured and working steadily. The expense in this case was mu less than that in several cases of dermatitis of one finger th I have seen.

The occurrence of cancer of the exposed skin, esp cially the hands and forearms, of grease-pit workers service stations has been reported.[5] The following repr sents this type of case.

Case 4.—J. D., a man, 63, worked in a garage for 20 ye cleaning trucks with gasoline and doing general maintenan work with kerosene and various solvents. In May, 1947, a seve rash developed on the dorsa of the hands (Fig. 5), which beca so bad that in September he had to stop work. Prior to this a lar lump on the back of his left hand developed, clinically diagnos as carcinoma. This was excised and a skin graft performed; t pathological report was epidermoid carcinoma. Since then t man has had a persistent dermatitis on his hands, and kerato and small epidermoid carcinomas continue to develop. He h had several operations and has received roentgen ray thera The lesions excised have been both benign epitheliomas a well-differentiated epidermoid carcinomas. The case has be accepted, and he has continued under treatment.

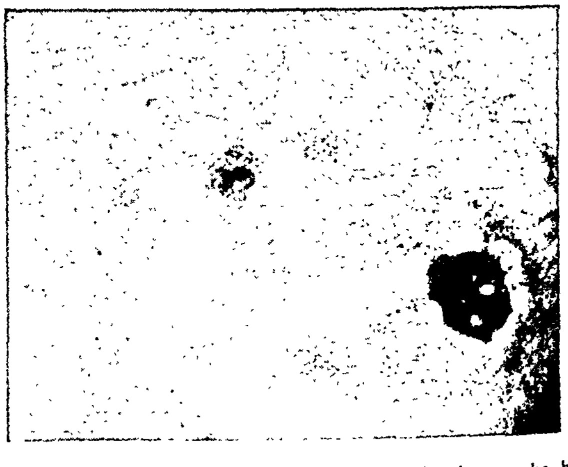


Fig. 4.—Squamous cell carcinomas in railroad laborer who han *creosoted ties for many years. (By permission of* Dr. A. B. Kern.)

In a recent report presented at the Cancer Resea Symposium of the Detroit Institute of Cancer Resea in Detroit, Holt [13] gives some interesting facts. He sta that about three years ago it was brought to the attenti of his company that a case of scrotal cancer existed i refinery of one of their affiliated companies. Furt examination of the records of this company revealed t for several years there had been three or four cases scrotal cancer. In this particular refinery the manufact of paraffin wax was one of the operations carried out. A careful study indicated that the incidence of cancer was not significantly different in any part of the refinery from the incidence of cancer in the population at large, except in the paraffin department.

---

[13] Holt, J. P.: Occupational Cancer with Special Reference to Certain Petroleum Fractions, read before the Cancer Research Symposium of the Detroit Institute of Cancer Research, Detroit, Sept. 14, 1949.

In the wax-pressing operation crude paraffin wax, known as slack wax, is filtered from petroleum distillate by passing petroleum distillate through a special canvas cloth filter. This unpurified paraffin wax, which is deposited on the filter, is removed by the pressmen. In the process of removing this slack wax from the filter, there is considerable contact of the slack wax and oils with the skin and clothing.

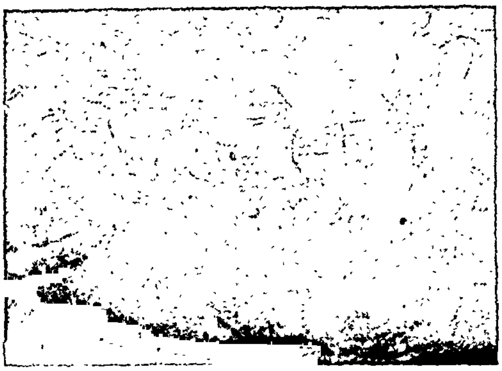


Fig. 5 (Case 4).—Epidermoid carcinoma occurring in a garage man after 30 years of service.

Later, despite precautionary measures, three new cases of cancer of the scrotum were discovered. Experimental animal studies were performed in order to determine which part of the slack wax or which part of these oils was the carcinogenic agent, as well as to determine which paraffin distillates are carcinogenic. Holt concludes that on the basis of these, as well as other studies, it is clear that petroleum products, such as gasoline, kerosene, home-heating oils, and diesel fuels, are innocuous but that the high-boiling catalytically cracked fractions, which are used as industrial fuels, are potentially carcinogenic. The carcinogenic components are present in the 700 + F fraction of these oils and absent from the fraction boiling at temperatures below 700 F.

PHYSICAL TRAUMA AS CAUSE OF SKIN CANCER

The next point to consider is the effect of physical trauma as a possible cause of skin cancer. There again the claims for such an injury are rare. In all the years I have been interested in industrial dermatology, I have never been thoroughly satisfied that a single trauma ever caused cancer—i. e., no case satisfied the requirements originally outlined by Ewing.[14]

It has been a custom in my office always to obtain two histories on industrial cases, each by a different person. It is amazing at times how these histories will vary, especially as regards onset, time, and location. It is, therefore, well to try to obtain confirmation of the patient's history of his condition before and after the alleged accident.

Case 5.—J. McD., a painter, 39, stated that in the latter part of 1931 in stepping down from a ladder he fell against a small hook, which penetrated his clothing and cut the skin on the right shoulder. At the end of the day he found blood on his shirt. He was treated by the family physician for months, was then referred to the clinic, whence he was sent to my office. Examination on March 10, 1933, showed over the right scapula a cauliflower-like, ulcerated lesion 6 in. in diameter. The clinical diagnosis was epidermoid carcinoma. The history obtained from this patient was very unsatisfactory—his answers were evasive, the time of injury was uncertain, and he was vague as to the subsequent dates of treatment and observation. This case was not accepted, but the insurer was willing to have the lesion excised. The patient refused this treatment and went to a nonmedical man reputed to be a cancer expert, who treated the lesion with an arsenic paste. Two years later the patient was seen at the Skin Clinic of the Boston City Hospital and showed a tremendous new growth on the same area. It was interesting to note in his record that as a child he was burned at this same site and had received all kinds of radical treatment. Apparently the single injury was not the causative factor in this case.

Another point to remember is that men doing a certain type of work frequently hit the same area many times during the day but later remember only the last bump, when they notice some change in the skin that progresses into a cancerous lesion. I believe that this could be true in the following case.

Case 6.—J. C., a man, 48, worked for 25 years repairing fire-alarm boxes, receiving numerous small cuts on his hands. In August, 1949, he hit the knuckle of the left third finger against a junction box, causing bleeding and breaking the skin. Gradually a warty growth developed. Examination on Sept. 20 showed clinically a typical epidermoid carcinoma. The lesion was excised, and the clinical diagnosis was confirmed by the pathological examination.

Minute repeated injuries may result in the appearance of epitheliomas of the skin (Fig. 6). I think the commonest evidence of this occurrence in all dermatologists' offices is the large number of epitheliomas seen on the sides of the bridge of the nose and behind the ears, caused by the constant wearing of eyeglasses.

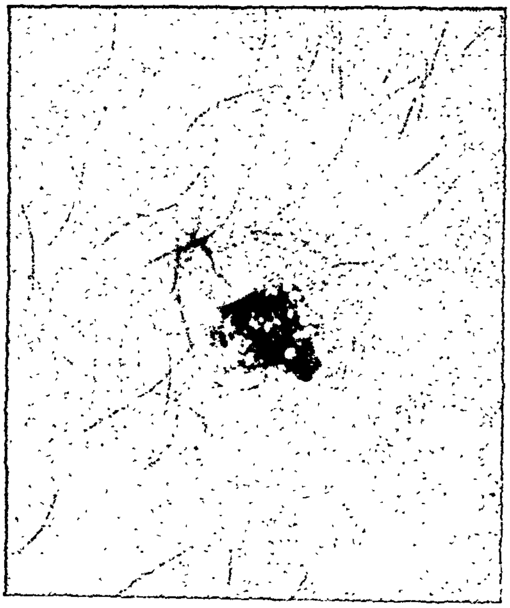


Fig. 6.—Epidermoid carcinoma appearing on hand after repeated slight injuries.

Whenever I see a worker who has a cancer claimed to be due to occupational injury, it is my custom, after carefully reviewing his occupational history and making a clinical diagnosis of cancer, to have the entire lesion excised and a pathological study made, instead of having a biopsy done. This procedure has been carried out on several occasions, with curative results. Although the insurers have not assumed liability, in no case have they refused reimbursement to the surgeon.

---

[14] Ewing, J.: Bulkley Lecture: Modern Attitude Toward Traumatic Cancer, Arch. Path. 19: 690-728 (May) 1935; also Bull. New York Acad. Med. 11: 281-333 (May) 1935.

When it comes to a question of severe crushing injury with subsequent infection and prolonged treatment, the attending physician should be alert as to the possibility that cancerous degeneration may have occurred in the resulting wound (Fig. 7). This is exemplified by the following case.

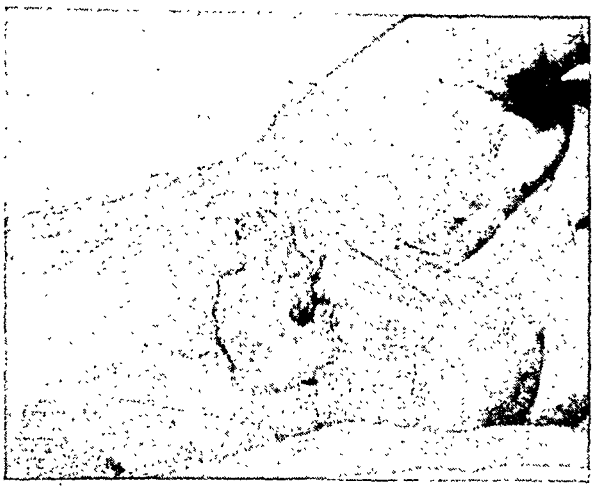


Fig. 7.—At work on Jan. 6, 1932, patient's wrist was crushed by a tip-cart. The wounds persisted and were treated by several physicians, one of whom made a diagnosis of dermatitis factitia. This photograph was taken nine months after the injury, at the time of my first examination. A biopsy showed epidermoid carcinoma.

Case 7.—J. N. M., a man, 21, was struck on the lower lip while playing basketball in February, 1946. A tooth pierced the right side of his lip near the commissure. A sore which persisted for months was diagnosed as granuloma pyogenicum and was treated with various remedies. When it persisted for over a year, a biopsy was made, and the pathological report was basal cell epithelioma. Treatment with roentgen rays caused rapid permanent healing.

If sufficient facts are presented before an industrial commission, with corroboration by apparently reliable witnesses, there often is no need for the attending physician to express a definite opinion in order to secure medical care and treatment for the patient. In the following case, in which the patient was seen by expert surgeons, I could find no statement in the records which expressed an opinion as to the causative relation between the original injury and the resulting malignant tumor. However, this case was accepted by the insurer and proper medical treatment and compensation were given.

Case 8.—B. M., a woman, 75, was employed as a dishwasher. In July, 1947, a tray of dishes struck the inner side of the lower part of her left leg. A black-and-blue mark immediately appeared, and three days later she noticed swelling. In August she received treatment by her physician and was later referred to the insurer's clinic. The lump continued to grow. Roentgen ray findings were normal, and a biopsy done in December showed a fibrosarcoma. Despite x-ray therapy, the tumor mass continued to increase in size. On May 20, 1948, the patient had an extensive local excision and skin graft, but the tumor recurred; finally on Sept. 20 she had a low-thigh amputation. This, however, failed to stop the progress of the disease, and on April 28, 1949, she had a left hip disarticulation and reamputation at groin level, with dissection of inguinal nodes. The last report was that the patient was still alive.

Authenticity and Adequacy of Trauma.—As I stated before, I have never seen a case which satisfied all the essential criteria demanded by Ewing for the establishment of proof that a single trauma could cause cancer. In expressing an opinion on epithelioma allegedy occurring after a single trauma, it has been my policy to say: "The etiology of cancer is still a mystery. The accumulated evidence of millions of injuries, operative procedures, and experimental attempts denies the probability of a cancer occurring after a single injury." How can one determine definitely the adequacy of a trauma? Most of the claims I have seen have followed a very slight injury, such as a simple burn from a hot spark or hot oil (Fig. 8). An example is the following case.

Case 9.—L. M., a bench hand, 42, burned his forehead with hot slag in May, 1950. A sore developed and persisted until March, 1951, when biopsy showed a basal cell carcinoma. With radium treatments the lesion was healed in one month.

Previous Integrity of Wounded Part.—I think that age is the best proof as regards previous integrity of the wounded part. The occurrence of cancer of the skin in young persons, although it does occur, is very rare. Most men in their fifties have keratoses on the face, in the majority of cases unnoticed by them; therefore, how could it be definitely proved that such a lesion did not exist before an injury? In the following case, for example, it is apparent that the disability and subsequent medical expense originated from the unusual reaction that this man suffered from treatment of a simple keratosis, which allegedly occurred from the burn. This patient, however, being in the age bracket for occurrence of keratoses and presbyopia, probably would not have noticed a keratosis before the injury.

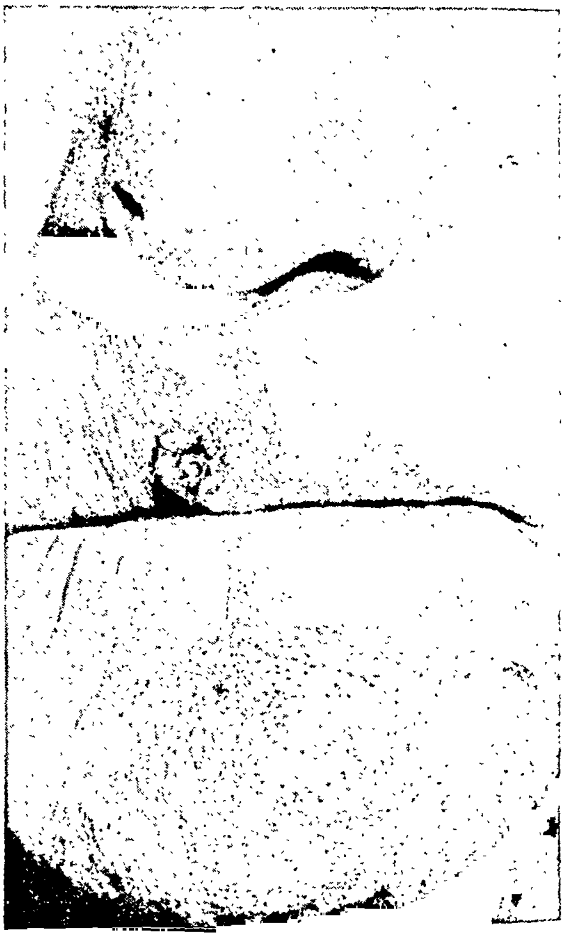


Fig. 8.—Basal cell epithelioma allegedly caused by a burn from a spark during a welding operation. (By permission of Dr. F. Ronchese.)

Case 10.—J. B., a man, 55, was employed as a metal-lathe operator. On Aug. 16, 1948, while he was operating a giant metal lathe, a piece of red-hot metal flew off and came to rest on his right cheek, just inside his glasses. It caused a small burn, which despite repeated treatment did not heal. A biopsy was made at a tumor clinic, and the pathological report was senile keratosis. Roentgen ray therapy was instituted, and on Jan. 8, 1949, a note was made that there was considerable reaction subsequent to this therapy. Becoming impatient, the patient instituted numerous therapies of his own, as well as consulting various physicians, who treated him with sensitizers, including penicillin. By the middle of March, 1949, he had an extensive eruption, as a result of which he was disabled for a long period of time. The case was finally settled for $3,450.

A more successful outcome is demonstrated in the following case.

CASE 11.—H. J. L., an electroplater, 61, in 1942 had acid splashed on the right side of his face, causing a burn which received immediate treatment but did not heal. Examination on Sept. 6, 1946, showed a superficial ulceration with a raised rolled border; the biopsy report was a basal cell carcinoma. At the insurer's request, treatment with radium was instituted, with prompt healing. This man has remained under observation up to the present time and has shown no recurrence.

Origin of Tumor at Exact Point of Injury.—Dispensary records should corroborate this kind of development. Therefore, it is important that all dispensaries keep exact records of the part affected by injury. This should be very easy as regards the skin, for it is unlikely that anyone would make a claim for cancer of the elbow when the alleged injury occurred on the hand.

Reasonable Time Limit Between Injury and Appearance of Tumor.—If a wound produced by an injury has never healed and later cancer is diagnosed at this site, it is reasonable to presume that such an injury caused, or at least aggravated, a preexisting growth of the skin. However, in most of the cases that I have seen, there has been an interval of weeks or even months between the injury and the resulting growth, and often there is no record of any original cut or bruise. All the patient can remember is that he hit his skin at an indefinite time weeks or months before.

CASE 12.—F. S., a stevedore, 40, on Sept. 22, 1938, presented clinically a typical basal cell epithelioma on the left side of the bridge of the nose. He stated that while at work two months previously a piece of wood hit him on the left side of the nose. It caused a superficial wound, which never healed. This case was not accepted because of the indefinite history and lack of corroboration. However, the man was referred for treatment, and the lesion was treated without delay.

Diagnosis of Presence and Nature of Tumor.—As regards the skin, diagnosis is apparently simple. The clinical appearance and ease of biopsy make this so. The causative factor, however, may not be so apparent. A careful history of the worker's exposures to possible carcinogens, which may range from excessive exposure to sunlight to exposure to numerous chemicals, should help to solve the mystery. Perhaps the alleged recent blow on a skin predisposed to cancer by repeated exposure to carcinogens is the answer. Each claim should be thoroughly studied and investigated before a decision is made. I have seen only one claim for aggravation.

CASE 13.—E. B. G., a shoe worker, 60, had received x-ray and radium treatment for cancers of the face and left ear. On Sept. 7, 1948, his face was burned while he was removing a pan of hot bleach from an electric heater. The skin became red and blistered, and he received first-aid treatment at the plant before being referred to my office. Examination revealed a marked burn of the entire face. Several areas also showed atrophy and telangiectasia resulting from previous therapy for skin cancers. Three months later a keratosis developed on the burned area, and at the same time the patient showed an epithelioma of the left ear. Inasmuch as the area of keratosis had been previously burned, the insurer assumed payment for treatment but refused to take care of the epithelioma of the left ear, since it was not involved in the burn. However, this was also treated with good result and without cost to the patient.

It is interesting to read the controversial literature. Stewart [15] writes:

> As far as I know, I have never seen a cancer which I could logically and irrevocably assign to single trauma, and, even more important that that, I do not know that anyone has ever observed the development of a process which could be called "precancerous" after a trauma. The absurd efforts made in our compensation courts to emphasize the severity of trauma rests on the nonsensical point of view that there is some dividing line between the degree of trauma which will or will not cause cancer, under the popular supposition that the metabolic changes which make a cell a cancer cell require a few additional dynes for their complete florescence.

Woodward,[16] apparently in answer to the preceding, cites a case of malignant growth after single trauma in which the state supreme court found for the plaintiff, and the court summary was very enthusiastic about the abnormal findings. Woodward asks:

> Have biology and medical science already determined the causes of malignant growths in the human body so certainly as to call for affirmative action to cause the adoption universally of the dictum that no single trauma ever has caused a malignant growth or ever can do so? Do available records indicate that under existing medical and legal procedure so many employers are being unjustly required to pay compensation for malignant growths due to single traumas as to require a revision of medical opinion with respect to the cause or causes of such growths? If neither of these questions can be answered in the affirmative, why not wait for further evidence as to the causes that operate to produce such growths before undertaking to reform medical opinion?

Stewart [17] apparently wrote for copies of the testimony in this case and three years later in an article proceeded to tear the testimony apart. Although it was heard by a full court, he doubted the veracity of the witnesses and made the extraordinary statement:

> . . . the alleged relationship was something stimulated by a physician looking for a cause for something *he didn't* understand. One wonders if the patient were not more astute than the doctor because the former never filed any claim for compensation during his lifetime and the institution of claim seems to parallel roughly the receipt of bills for medical and funeral expenses.

I could find no answer to this article in the literature. Articles of this type are not conducive to thorough investigation of the worker's claim. In other words, the physician assumes the role of plaintiff, physician, lawyer, and judge, which is rather a large role for one person.

It is my opinion that in most of these cases lawyers and laymen, not having a good scientific knowledge of medicine, are likely to accept a physician's opinion as a fact. Although medicine is constantly reversing its opinions and theories, as a result of increased scientific knowledge, lawyers and judges are likely to base their findings on previous examples of similar cases and make the finding on past decisions rather than medical research, which often contradicts these findings.

---

[15] Stewart, F. W.: Cancer Said To Be Caused By A Single Injury, Correspondence, J. A. M. A. **126**: 125 (Sept. 9) 1944.

[16] Woodward, W. C.: Malignant Growth After Single Trauma, Correspondence, J. A. M. A. **126**: 724 (Nov. 11) 1944.

[17] Stewart, F. W.: Occupational and Post-Traumatic Cancer, Bull. New York Acad. Med. **23**: 145 (March) 1947.

PREVENTION OF OCCUPATIONAL CANCER

The problem of preventing occupational cancer has been rightly called a challenge to the physician. A pamphlet issued by the New York State Occupational Cancer Committee [18] considers the problem unique in that the data required cannot be developed in a research laboratory or university. It must be supplied by the physicians who actually see cancer patients or patients with suspected cancer, either in their own private offices, cancer-screening clinics, or the hospitals. It is thus a research problem of extraordinary importance practically made to order for the busy practitioner who is willing to devote the few extra minutes necessary to take a careful occupational history of his cancer patients and to report, for further investigation, patients suspected of having been exposed to carcinogenic agents in industry. The committee is prepared to trace any suspected case of occupational cancer in their state to the workroom where it is believed to have originated and to make all necessary technical investigations of the environmental factors which might have been responsible. In thus tracing the occupational exposures of cancer patients, it is hoped that occupational factors not now suspected of causing cancer will be brought to light.

With the expansion of modern industry involving the use of many new compounds, new sources of industrial carcinomas will undoubtedly be recognized. Radium, plutonium, radiostrontium, and many radioactive compounds derived from them are carcinogenic. Even contaminated waste materials may spread the danger and must be collected and isolated, preferably by deep burial. A definite hazard exists to physicians and associates from local and general irradiation when they work with these materials over a considerable period of time. Industrial applications of x-rays outside of medicine have been largely confined to x-ray photography or fluoroscopy in such diversified fields as the detection of metallic foreign bodies in food and the fitting of shoes.[2]

According to Drinker,[19] the misuse of x-ray equipment in the hospital of one Maritime Commission yard forms an unwholesome chapter in the history of our shipyards. Several yards doing Navy work were required to examine various castings and welds on high pressure lines by roentgen ray or radium. Precautions were adequate, but only after some struggles with physicists in charge, as well as with the management. The following report is an example of carelessness.

Case 14.—J. F. C., a steam fitter, 37, had picked up on May 25, 1945 what he believed to be a "plum bob" left behind by the men. He put it in a pocket on the left side of his shirt, where it remained until he changed his workclothes two and one-half hours later. The following day he learned that the object was a full gram of radium (used for experimental purposes) and having heard of the possible serious results of such exposure he became very nervous. On May 27 he experienced a burning sensation about the left breast and noticed a silver-dollar-sized area of erythema. According to his history, the burn went through his ribs and the lower part of his lung to his back. The area on his breast blistered and peeled about 12 times. When seen on Dec. 6, he complained of weight loss of 33 lb. (15.0 kg.), loss of considerable hair on his scalp, and loose teeth. Physical examination showed a patch of erythema with atrophy and telangiectasia on the anterior aspect of the left side of the lower part of the chest. The area was 3 by 3½ in., and most of the hair in this region was growing in the follicles. On Feb. 8, 1951, the patient returned to his regular labors, having done a little work in the meantime. The patch on the chest was reported to be red with dark lines throughout and caused occasional itching. The patient had regained weight and was feeling pretty well.

In an editorial Aebersold,[20] Chief of the Isotope Division of the United States Atomic Energy Commission, stated that the commission, as well as the Manhattan District Corps of Engineers, who were the original operators of the atomic energy project, had always been keenly aware of the importance of radiological health. This is evidenced by the excellent record of radiological safety. Indeed, the problems of radiological health have been so well managed that none of the widespread and varied phases of atomic energy development are known to have ever caused a public health problem. Precautionary measures used in any big plant are the same as should be used in all plants where there is any hazard which would cause dermatitis or any other untoward reaction of the skin.

CONCLUSION

While claims for compensation for skin cancer due to occupational trauma are rare, cases of occupational cutaneous cancer do exist. The cancer appears on the exposed areas of the skin. A careful history of a patien with cutaneous cancer should reveal whether or not his occupation is a factor. Statistical studies of the incidence of industrial skin diseases are likely to be misleading. The reported incidence of occupational skin cancer is low but records do not reveal its true incidence. Cases of cancer of the skin allegedly from tar, arsenic, creosote solvents, paraffin wax, and repeated injury are cited. The essential criteria for the establishment of proof tha physical injury could cause cancer must be stressed. The problem of prevention of occupational skin cancer rests on the individual physician. A careful history should make him suspicious of the occupational exposures and stimulate proper agencies to conduct thorough investigations. The record of the United States Atomic Energy Commission shows what can be accomplished if the dangerous hazards of industry are frankly reviewed, and accepted methods are installed for proper prevention o illness among the employees.

520 Commonwealth Ave.

---

18. Occupational Cancer, New York State Department of Health, 194
19. Drinker, P.: Health and Safety in Contract Shipyards During th War, Occup. Med. 3: 335-343 (April) 1947.
20. Aebersold, P. C.: Radiological Health, Indust. Med. & Surg. 20 202-204 (April) 1951.

Clinical Significance of Blood Volume.—The most importan practical application of the blood volume estimation is in th estimation of the preoperative and postoperative transfusion requirements of patients, particularly those who have been chronically ill for a period of time. Patients of this type may have fairly normal hemoglobin and red cell count or only a sligh apparent anemia, but a marked reduction in the blood volume. Actually they are severely anemic, and such patients constitute serious operative risks unless the blood volume is carefully and accurately brought within the patient's expected normal.

Another field of practical application is in the measure of anemia and of tolerance to transfusion of patients with cardiac failure. Many of these patients, particularly in the early phas have an enlarged blood volume and are particularly susceptib to circulatory overload reactions.—Max M. Straumia, M.D John J. McGraw Jr., M.D., Albert B. Sample and Robert Donato, M.D., Laboratory Aids in Diagnosis and Treatmen *The Medical Clinics of North America*, November, 1951.

TRANSABDOMINAL CHOLANGIOGRAPHY

R. Franklin Carter, M.D.
and
George M. Saypol, M.D., New York

X-ray examination of the bile ducts and needle biopsy of the liver are means for direct diagnosis of biliary tract disease. More experience in interpretation of findings in the roentgenograms and a great deal more study of the association of histological and physiological changes will be necessary before this direct approach to the problem can be perfected. While the indirect means of diagnosis through liver function tests have played an important role, their greatest use in the future will probably be in determining the extent of liver damage and the proper medical therapy needed.

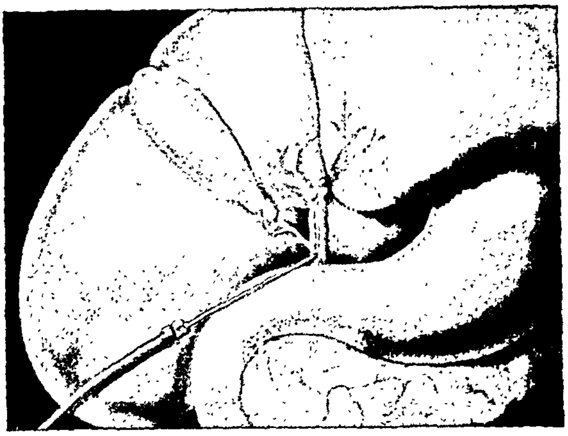


Fig. 1.—Insertion of angulated No. 20 spinal needle into the hepatic duct for the injection of iodopyracet compound solution.

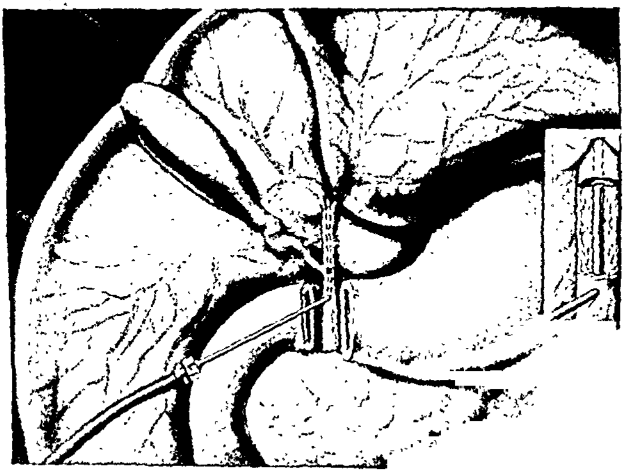


Fig. 2.—Similar procedure to that seen in Fig. 1, except that a longer needle is being used to pass a stenotic area in the common hepatic duct.

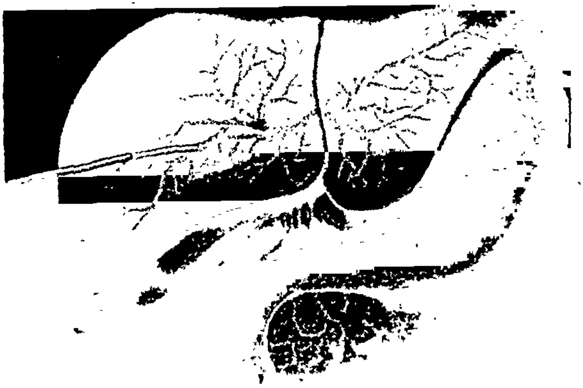


Fig. 3.—Direct injection of the needle through the exposed liver surface into the right hepatic duct or one of its larger tributaries.

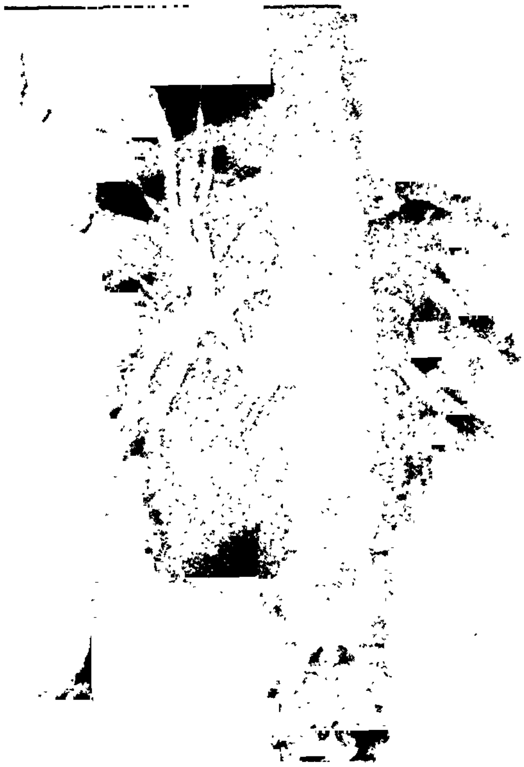


Fig. 4.—Cholangiogram revealing obstruction just distal to the union of the right and left hepatic ducts. This was performed through a catheter inserted in a trocar opening performed as in Fig. 3.

The development of the methods in use at the present time to portray the intrahepatic ducts has followed the course shown in Figures 1 to 5. In the first stage dye was injected, during the operation, directly into the common hepatic duct. Stenoses of the intrahepatic ducts were revealed in this way (Fig. 1). When atresia was found to exist (Fig. 2) a longer needle was inserted through the stenotic area to find white bile above the stenosis. When this procedure failed because of inability to find the intrahepatic ducts with a needle passing through the hilum of the liver in the general direction of the union of the two intrahepatic ducts, the third stage was employed (Fig. 3). The needle or trocar was passed through the liver substance. Aiming for the right or left main intrahepatic ducts, a needle or small trocar was passed slowly through the liver substance. When the duct was encountered, the increased resistance to its passage when it was going through the duct wall ceased as the point entered the lumen of the duct. Withdrawal of the stilette, when this point was reached, was followed by a flow of bile (Fig. 4).

Intra-abdominal examination up to this point was accompanied with no serious mishaps or postoperative complications. During this time bleeding from the needle puncture as well as bile drainage from a dry tap were found to be slight and subsided promptly. Because of this fact and the experience in needle biopsies reported by others,—i. e., that occasionally bile was obtained during needle biopsy—we discussed, and resolved to attempt, a cholangiogram through the exploring needle. We planned the procedure for use when a patient presented a picture of bile duct obstruction with such severe liver damage together with evidence of portal hypertension that primary abdominal exploration was contraindicated.

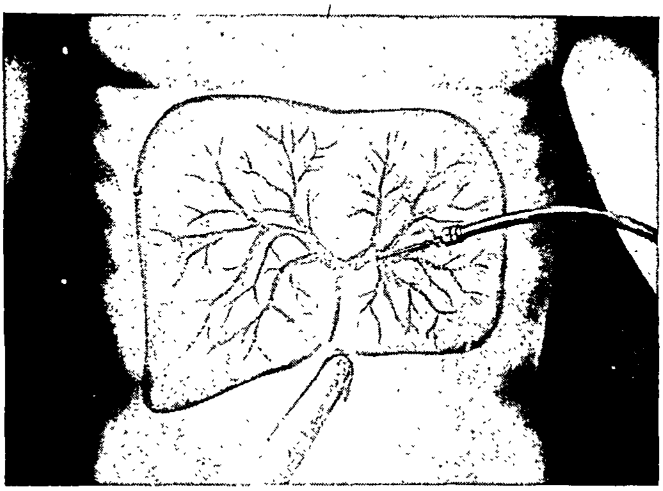


Fig. 5.—Insertion of a No. 17 spinal needle directly through the abdominal wall and liver substance into the left hepatic duct system. Note the finger of the left hand palpating the liver edge for orientation.

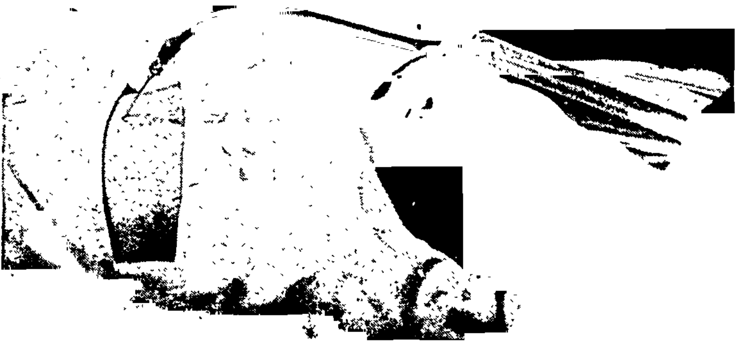


Fig. 6.—Transabdominal examination with the needle in place, transfixing the abdominal wall 4 cm. to the left of the midline at the point of the ninth rib.

REPORT OF CASE

D. D., a 36-year-old Italian housewife, had been jaundiced for seven months. She also had right upper quadrant pain, nausea and vomiting. During the first month of her illness she was examined elsewhere and a normal extrahepatic biliary tract was seen, except that it was noticed that the cystic duct nodes were enlarged to the size of the end of the thumb. The liver extended to the umbilicus and the spleen was double the normal size. Histological examination of biopsy material showed "interstitial hepatitis, probably reactive to obstruction in the biliary system."

At that time, laboratory examination gave the following results: alkaline phosphatase, 7.8 units; cephalin-cholesterol flocculation, negative; icterus index, 80 units; serum bilirubin, 8.7 mg. per 100 cc.; total protein, 7.2%; albumin 3.4%; glob 3.8%.

The patient felt better but was bedridden. In the six wee before admission she noticed deepening jaundice, abdomin swelling and pruritus.

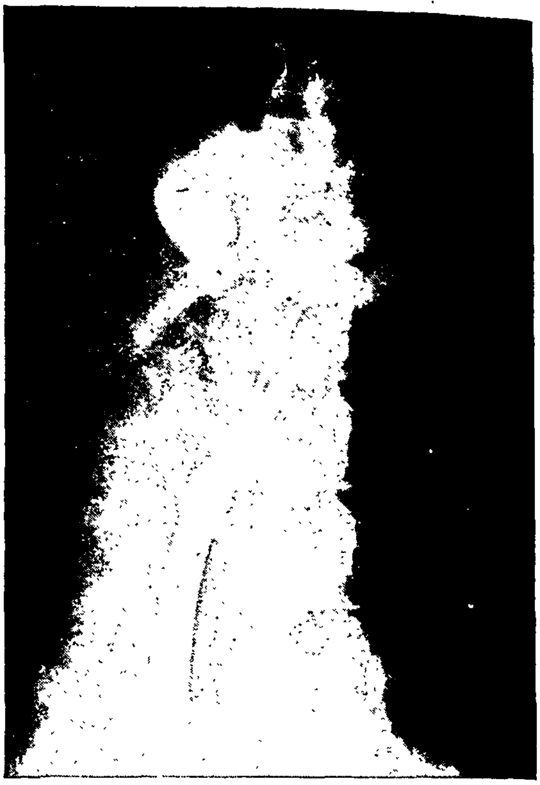


Fig. 7.—Transabdominal cholangiogram showing the needle in plac Iodopyracet compound solution, 15 cc., has been injected, and a comple obstruction of the hepatic ducts at the hilum is demonstrated.

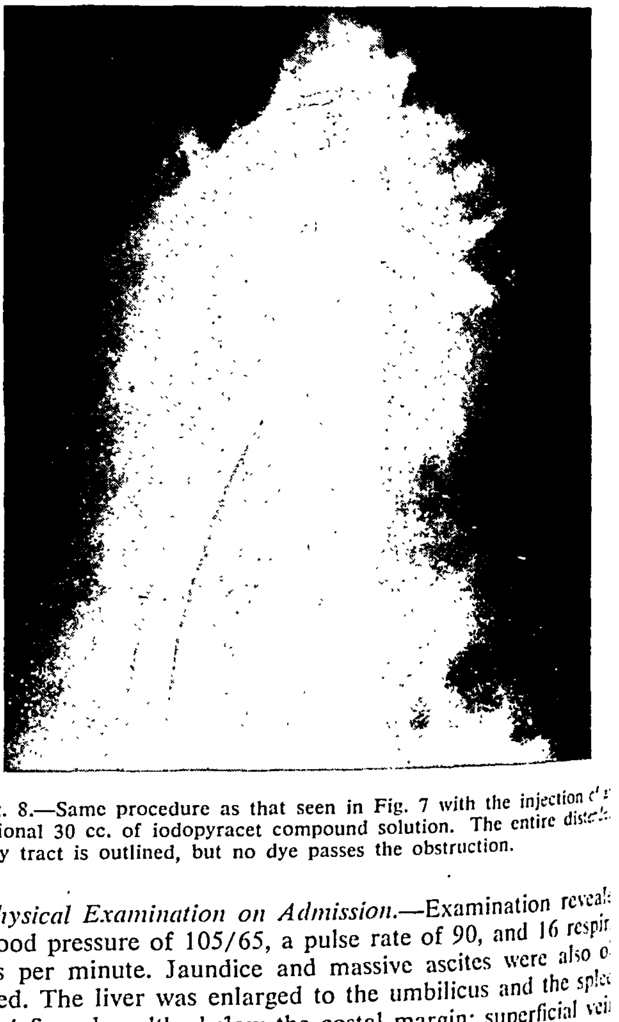


Fig. 8.—Same procedure as that seen in Fig. 7 with the injection o additional 30 cc. of iodopyracet compound solution. The entire dist biliary tract is outlined, but no dye passes the obstruction.

Physical Examination on Admission.—Examination reveal a blood pressure of 105/65, a pulse rate of 90, and 16 respir tions per minute. Jaundice and massive ascites were also o served. The liver was enlarged to the umbilicus and the sple was 4 fingerbreadths below the costal margin; superficial vei were markedly dilated; a right rectus scar was well healed.

She had a small hematemesis (260 cc.) shortly after admission on Dec. 13, 1950; a paracentesis yielding 10 liters of fluid was done on Dec. 22, 1950. The patient had repeated hematemeses and melena and was considered to be in the terminal stages, but she rallied and appeared much improved with transfusions and the paracenteses.

Laboratory Examination.—Laboratory findings were as follows: red blood cell count, 2.2; hemoglobin, 5.7 gm.; icterus index, 160 units; bilirubin, 18.6 mg. per 100 cc.; total protein, 5.3%; albumin, 3%; globulin, 2.3%; alkaline phosphatase, 9.1 units.

Operation.—The usual preparations for immediate cholangiography are made and the patient is anesthetized with sodium pentothal. A No. 17 spinal needle without obturator is then inserted through the abdominal wall into the left lobe of the liver in the direction of the bile ducts (Fig. 5). When blood is obtained, the needle is inserted further or withdrawn slightly as the hepatic vessels are in close apposition to the hepatic ducts. After bile is flowing from the needle (Fig. 6), it is aspirated, and than 15 to 45 cc. of 35% iodopyracet (diodrast®) compound solution injected. Films are taken by the usual technique. The needle is fixed and strapped firmly to the skin surface so that bile will continue to drain externally; the procedure thus becomes a choledochostomy (Figs. 7 and 8).

Diagnosis.—Biliary obstruction at the porta hepatis was diagnosed.

Postoperative Course.—Culture of bile from intrahepatic ducts was negative. The patient improved and drained green and golden-yellow bile through the retained needle acting as an operative choledochostomy. Suddenly, on Dec. 29, 1950, she had a massive hemorrhage (hematemesis and melena) and died despite blood transfusions and the use of a Blakemore tube to occlude bleeding esophageal varices.

Autopsy Report. — The peritoneal cavity contained about 2,000 cc. of thin, bloody fluid. Palpation of the abdominal and pelvic organs showed no gross changes of interest with the exception of the changes in the liver and the region of the hilum.

In the latter situation, firm tumor nodules were encountered involving the upper portion of the common bile duct, the two hepatic bile ducts and the region of the neck of the gall bladder. At the hilus of the liver there was dilatation of the intrahepatic bile ducts and the liver itself showed a coarsely granular surface and coarse granularity of the cut surface as well. The weight was 1,800 gm. and the color was greenish brown. A tumor nodule at the hilum of the liver extended somewhat into the liver substance and a reddish, hemorrhagic nodule on the superior dome of the liver on the right side was also apparently a tumor.

COMMENT

The diagnosis of liver and biliary disorders is difficult despite function tests such as needle biopsy. A method has been described that may be useful diagnostically and therapeutically in selected cases of obstructive jaundice.

University Hospital, 303 E. 20th St. (Dr. Carter).

THE TECHNIQUE OF TRANSLUMBAR ARTERIOGRAPHY

Parke G. Smith, M.D., T. W. Rush, M.D.
and
Arthur T. Evans, M.D., Cincinnati

By translumbar arteriography is meant the roentgenographic visualization of the abdominal aorta and its branches at that instant when they have been rendered radiopaque by the injection into the aorta of a roentgenopaque fluid. The technique, which will be described below, provides valuable information that is otherwise unobtainable by the present routinely utilized methods of urologic diagnosis. By the procedure, the renal arterial supply is visualized and abnormalities from its normal pattern are detected.

DIAGNOSTIC VALUE OF ARTERIOGRAPHY

It is possible to differentiate between renal tumors and cysts because of the obvious difference in arterial patterns of these two conditions, the former showing an irregular pattern in the area of the tumor as well as the characteristic "pooling" and "puddling" of the contrast medium in that area. As would be expected, the presence of a cyst is determined by demonstrating an avascular area and, in contrast to tumor, a lack of "puddling" and "pooling" of the contrast medium.

Arteriography has conclusively demonstrated the potential function of a kidney whose ureter is obstructed when intravenous pyelogram has failed to demonstrate its status. This is possible by visualizing the quantity of the renal arterial supply, which we feel is in direct relationship to the potential function [1]; further, the parenchymal arterial pattern, by its sparseness or normalcy, reveals the quality of its substance.

The visualization of anomalous vessels producing or not producing ureteropelvic obstruction is of definite value when renal surgery is being considered, for it facilitates accurate preoperative determination of the position of the anomalous vessel. Aneurysms of the abdominal aorta and its branches are readily demonstrated by the procedure, as well as obstruction, due to thrombosis, of the lower abdominal aorta, renal arteries, nd iliac vessels. Multiple infarcts of the kidney have been demonstrated by us in five patients, and twice we have visualized partial or complete obstruction of a renal artery. Extrarenal retroperitoneal masses may be readily differentiated from kidney masses by demonstration of a normal renal arterial pattern in the presence of a retroperitoneal mass. There is some evidence that hyperplasia and tumors of the adrenal may be identified by this procedure. We feel that it is necessary that the urologist demonstrate ischemia of one kidney by arteriography before doing nephrectomy for the cure of the Goldblatt type of hypertension.

SAFETY OF THE METHOD

Translumbar arteriography, although not a new diagnostic procedure, has only recently been technically developed to a point where the simplicity and safety of

---

From the Department of Surgery, Division of Urology, University of Cincinnati College of Medicine.

[1] Doss, A. K.: Translumbar Aortography: Its Diagnostic Value in Urology, J. Urol. 55:594, 1946.

the procedure is such as to warrant its general use as a diagnostic instrument.[2] The principle of translumbar arteriography was originally described by Dos Santos in 1929.[3] Apparently, the fear of puncturing the aorta prevented a general acceptance of this principle; in spite of the brilliant reports of Nelson [4] and Doss,[5] the procedure has seldom been utilized.

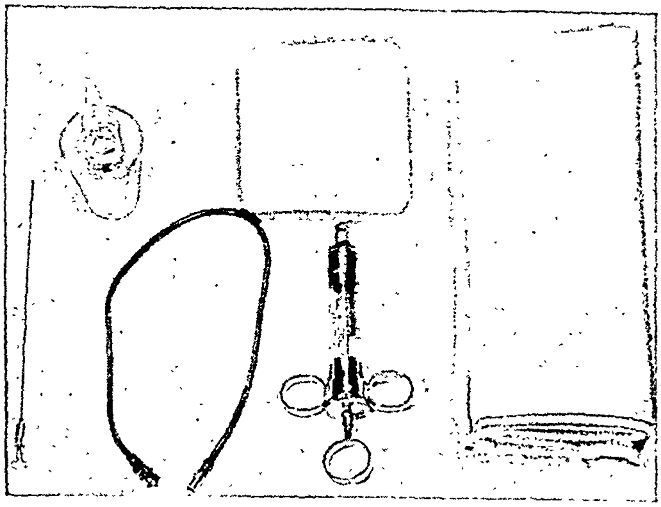


Fig. 1.—Tray with sterile equipment for translumbar arteriography.

We believe, on the basis of results in our series of 668 aortic punctures in private and service patients, the selection of patients being restricted only by uremia and inability to tolerate thiopental sodium anesthesia, that we have proved that the procedure is safe. We have had no deaths from the procedure; there has been no extra-aortic hemorrhage at operation following the puncture; and the morbidity has been limited to occasional diaphragmatic irritation, occasional minimal abdominal tenderness and, most frequently, the complaint of pain and soreness at the skin puncture site. We now utilize the procedure routinely in our diagnostic studies of the upper urinary tract.

We have performed aortic punctures on approximately 70 patients who were dying because of uremia, cancer, or malignant hypertension. Autopsies were obtained in 36 cases. The punctures were performed as short a period of time as possible before the anticipated death of these patients. In the 36 patients, death occurred six hours to 24 days after puncture. No patient was in shock at the time of puncture. In only six patients was there blood outside the aorta at the puncture site, and in none of these was the area larger than a golf ball. In the majority, the puncture site was not detectable. Three of the 36 patients had punctures through an atheromatous plaqu
and in none was there hemorrhage.

One of the most difficult aspects of translumb
arteriography (which we feel it should be termed rath
than "aortography," because more than just the aorta
visualized) is the interpretation of the arteriogram.[6] On
number of occasions we have found, at the time
surgery, that we had misinterpreted the arteriogra
For example, a patient with a large calculous pyoneph
sis was found to have an associated cancer which w
definitely demonstrated by the arteriogram but not re
ognized as such prior to surgery. Experience has i
creased and will continue to increase accuracy of dia
nosis by means of arteriography.

The originally described technique of translumb
arteriography of the abdominal aorta used until recen
required the use of a pressure apparatus for the injecti
of the contrast medium into the aorta.[7] This meth
possesses certain inherent dangers that lead to seric
and occasionally to fatal complications. This techniq
is cumbersome, complicated, and subject to techni
errors. A modification of the technique that would eli
nate the aforementioned faults seemed indicated. We f
that a satisfactory arteriogram could be obtained
injecting a small amount of contrast medium into t
abdominal aorta by means of a syringe operated
hand. We have used a procedure based on the abo
stated simple method in our entire series and offer it
a simple, safe method of obtaining satisfactory arter
grams.

EQUIPMENT

As a result of increasing experience with the p
cedure, the equipment for translumbar arteriography l
been minimized. We now use a tray with a 10 cc. sa
lok® control syringe, male and female luer-lok® adapte
plastic tubing of the type used for commercial int

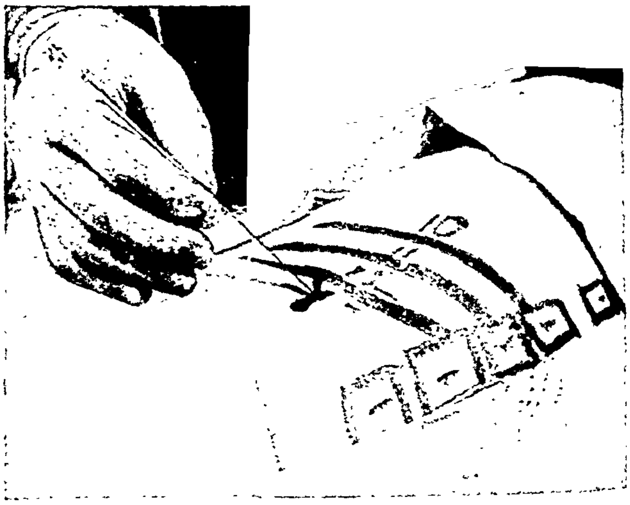


Fig. 2.—Position and direction of insertion of the needle to the thoracic vertebra.

us sets, an 18 gage, 6-in. (15 cm.) needle wit
t, four sterile towels, a medicine glass, cont
gauze for scrubbing the lumbar area (l
tubing is attached to the adapters
ium silk or No. 32 steel wire.
nge is important because it c
nger and thus produces less
affords easier injection.

---

[2] Smith, P. G.; Rush, T. W., and Evans, A. T.: An Evaluation of Translumbar Arteriography, J. Urol. **65**: 911, 1951.

[3] dos Santos, R.; Lamas, C., and Caldas, P.: L'artériographie des membres de l'aorte et de ses branches abdominales, Med. contemp., J
47: 93, 1929.

[4] Nelson, O. A.: Arteriography of Abdominal Organs by Aortic I
tion: Preliminary Report, Surg., Gynec. & Obst. **74**: 655, 1942.

[5] Doss, A. K.; Thomas, H. C., and Bor T. B.: Renal Arteriogra
Its Clinical Value, Texas J. Med. 3

[6] Evans, A. T.: Translumbar A Preliminary Repo
Cincinnati J. Med. **32**: 47 (Feb.) 19 ; Evans, A. T.; Els
E. C., and Felson, B. J.: Translum y: Its Roentgenolog
Interpretation, to be published.

[7] dos Santos, R.; Lamas, C., and progrès dans
la technique de l'artériographie de l'a Presse méd. **39**:
574, 1931. Doss, A. K.: Translumbar A for Injecting
Radiopaque Media, Surgery **16**: 422, 19

[8] The Smith-Evans translumbar arteri of
the needle, syringe, tubing, and adapters, arteriog-
raphy by the Max Wocher and Sons Comp.

The needle and syringe are sterilized for the procedure by autoclaving for 10 minutes. The tubing, with its attached adapters, deteriorates at high temperatures; therefore, we sterilize this portion of the equipment for 20 minutes in a sterile pan, with a fresh antiseptic solution uch as one uses for the sterilization of ureteral catheters. The tubing must be rinsed with a sterile saline solution before being used.

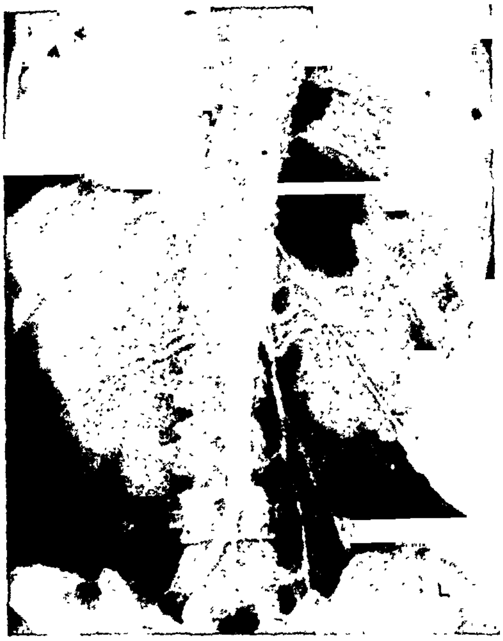


Fig. 3.—Normal arteriogram, demonstrating the aorta, the splenic, he hepatic, both renal, the inferior mesenteric, common iliac, hypogastric, ntercostal, and lumbar arteries.

TECHNIQUE

The patient is prepared by a soap suds enema eight and wo hours before the procedure, and nothing is taken by mouth for eight hours before arteriography. Morphine and atropine are given one hour before the procedure. The patient is placed on the x-ray table in the prone position, and a scout roentgenogram of the lower thorax, lumbar, and sacral areas is taken. The film is overexposed by 3 to 6 kv. more than one would expose a film for an intravenous pyelogram. The optimum exposure time is 0.10 second, which requires a high-speed Potter-Bucky diaphragm. While this film is being developed, the patient's back is given the usual surgical scrub and the left lumbar area draped with four sterile towels. The syringe barrel is completely filled with contrast medium, so that it contains approximately 12 cc. The adapters and tubing are attached to the filled syringe and the air bubbles are cleared from the syringe and tubing. After the scout roentgenogram has been viewed and any adjustments in technique or the patient's position have been made, the patient is anesthetized with an intravenous injection of thiopental sodium in a hand or wrist vein.

A point approximately 8 cm. or 4 to 5 fingerbreadths to the left of the spinous processes at the lower edge of the 12th rib is identified as the point where the needle is to be inserted. The spinous process of the 12th thoracic vertebra is then identified by palpating along the 12th rib up to its attachment to the vertebral column. The special arteriography needle is inserted at the above-stated site, ventrally and medially as well as superiorly, passing the tip of the needle to the body of the twelfth thoracic vertebra (Fig. 2). When the point touches this vertebra, the needle is withdrawn and advanced more ventrally again to the body of the vertebra. The needle must be withdrawn at least 2 to 3 cm. to change its direction. This is done several times, so that the tip of the needle is advanced in step-like fashion down the body of the vertebra until it passes under the anterior left edge of the 12th thoracic vertebra. The stylet is then removed and the needle advanced an additional 0.5 to 1 cm. until it enters the aorta. The needle, as it enters the aorta, will suddenly be released from the resistance it has encountered from the aortic wall, much as a needle entering the subarachnoid space. Only occasionally is aortic pulsation appreciated when the needle is advanced to the aortic wall. When the needle enters the aorta, because the stylet has been removed, blood drips from the needle-but never spurts.

Immediately after the needle enters the aorta, the tubing and syringe, filled with contrast medium, are attached to the needle. Before the injection is begun, it is made certain that there is retrograde flow of blood into the plastic tubing from the aorta via the needle and that there is pulsation of this column of blood. The rotary anodes of the x-ray machine are started and the injection is begun; the 12 cc. of solution is injected in a period of about 1½ to 2½ seconds. As the last cubic centimeter of contrast medium is being injected, the first film is exposed to obtain the arteriogram (Fig. 3). The needle is removed from the aorta immediately after completion of the injection of the contrast medium. As rapidly as possible, the casette is changed and a second film is exposed to obtain a nephrogram (Fig. 4).

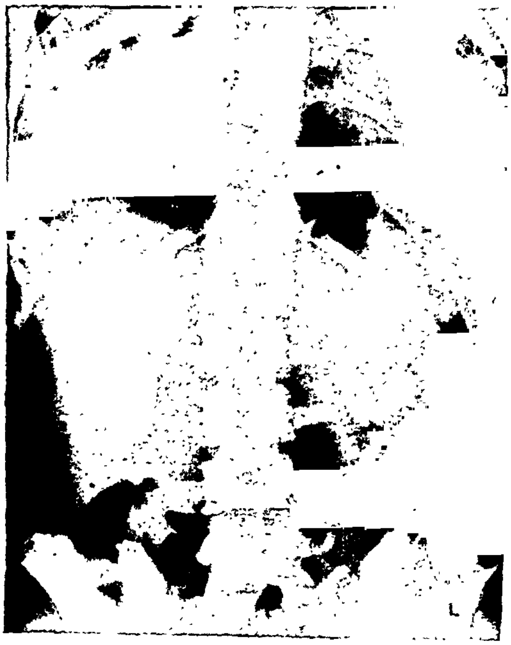


Fig. 4.—Normal-appearing nephrogram from case shown in Figure 3, showing contrast medium in the convoluted tubules and collecting tubules of the kidney.

The patient is immediately removed from the table and placed on the stretcher in the supine position. The entire procedure, when performed by the skilled operator, requires approximately three minutes of thiopental sodium anesthesia. An experienced operator will obtain nine satisfactory arteriograms from 10 aortic punctures. If an unsatisfactory result is obtained, a repeat arteriogram is not made immediately because of the danger of iodism, but we do not hesitate to repeat the procedure the following day.

Unsatisfactory arteriograms most frequently result from extra-aortic injection of the contrast medium, which is without ill-effect to the patient and is caused by (1) failure to enter the aortic lumen completely with the veled needle point before injection, (2) complete ansversing of the aortic lumen and walls, or (3) partial or complete manipulation of the needle from the aortic lumen before injection. The first of these accidents may be prevented by first gently puncturing the left aortic wall and then advancing the needle forward approximately 0.17 cm., making certain that blood drips from the needle at all points when the needle is rotated through 360 degrees. Complete transversal of the aortic lumen and walls may be avoided by not puncturing the aorta with such force that the needle plunges across the nonresistant lumen and the opposite aortic wall when it is released by the left aortic wall. It should always be kept in mind that the diameter of the aorta is in direct proportion to the size of the patient. Manipulation of the needle from the aortic lumen may occur while attaching the tubing and adapter to the needle. This accident may be prevented in two ways: 1. Determine that there is a normal drip of blood from the needle before attaching the tubing. The flow of blood from the needle will be most rapid when the needle bevel is pointing cephalad. 2. Most important, make certain that there is retrograde flow of a column of blood into the plastic tubing and a good stroke volume of pulsation of this column of blood when the syringe and tubing are attached.

Exposure of the x-ray film as the last cubic centimeter of contrast medium is injected is necessary. The contrast medium is rapidly swept away from the needle by the arterial stream. The desired result for renal studies is maximum concentration of the medium in the aorta and renal arteries at the time of x-ray exposure. This is present as the last of the contrast medium is injected. Experience will permit adequate visualization of other portions of the arterial tree by varying the timing. If contrast medium is spread throughout the entire aorta and the iliacs down to the inguinal area, the injection has been too slow. If the contrast medium is very faintly visualized, the injection has been too slow, unless the patient is extremely large.

The plastic tubing is of value in allowing motion of the syringe during the injection as well as in visualizing the retrograde flow of the column of blood. Originally, we attached the syringe directly to the needle but motion of the syringe, which is certain to occur during the rapid injection, accounted for movement of the needle out of the aorta and consequent extra-aortic injection. That the tubing be plastic is also essential, because plastic does not allow expansion of the tubing during injection. We used rubber tubing originally but had to discard it because of its lack of resistance. If one wraps the tubing tightly, by hand, to the adapter with medium silk suture or No. steel wire, the tubing should not pull from the adap during the injection.

MEASURES TO INSURE SAFETY

We have done translumbar arteriography with patie under both thiopental sodium and spinal anesthesia. Bo are acceptable, but the former is preferred because rapidity of induction and shortness of effect. Spinal an thesia is too long lasting and time consuming. Lo anesthesia has not been utilized because it produces o analgesia. Complete immobility of the patient while needle is in the aorta is obviously essential for saf and for a clear arteriogram.

It is probably best that the operator wear a lead ap while performing the procedure, thus affording hims protection from the roentgen rays. This is important any number of arteriograms are performed. The tub permits the hands to be removed from the field of roe gen ray exposure.

The needle should be inserted so that it enters aorta at least at the upper edge of the first lumbar, preferably the 12th thoracic, vertebral body. If the nee is inserted lower, it can accidentally enter the celiac a or the superior mesenteric artery. Entry into the lat has resulted in mesenteric thrombosis in the hands some.

Contrast mediums that are to be utilized for translu bar arteriography should be only acceptable nonto iodides used for excretory urography. We have employ 75% sodium iodomethamate (neo-iopax®) solution a 70% iodopyracet (diodrast®), and we are now studyi the values of 70% sodium acetrizoate (urokon® sodiu solution. All mediums must be in the more concentrat form in order to produce adequate contrast. A mo opaque and relatively nontoxic contrast medium for teriography is desired in order to increase the roentg opacity in large patients, much as in intravenous uro raphy.

CONCLUSION

By attention to technique in utilizing translum arteriography, we are able to gain worth-while inform tion in determining the diagnosis, possible prognosis, a proper method of therapy in selected cases. We feel th this is a valuable instrument in diagnosing the followi lesions relating to the kidney: (1) hypertension, (hydronephrosis, (3) neoplasm, (4) cyst, (5) anomali (6) aberrant arteries, (7) extrarenal retroperiton masses, (8) hypoplasia, (9) atrophy, and (10) agene Translumbar arteriography has definite value in discl ing vascular conditions of the splenic, hepatic, gast aortic, renal, iliac, and even femoral and popliteal teries. These lesions include anuerysm, fistulas, thro bosis, or other types of obstruction of these arteri Finally, we have utilized the procedure to localize cental position, thereby ruling out placenta previ is highly probable that further study will bring fo even broader applications of the procedure.

ADDENDUM

We have now performed over 1,000 aortic punctu without a fatality and without significant morbidity.

1908 Union Central Bldg. (Dr. Evans).

TUMORS OF THE SPERMATIC CORD

REVIEW OF LITERATURE AND REPORT OF TWO CASES

Raymond J. Fitzpatrick, M.D., Louis M. Orr., M.D., James B. Glanton, M.D.
and
Joseph C. Hayward, M.D., Orlando, Fla.

The purpose of this paper is twofold: first, to report wo cases of tumor of the spermatic cord, a lipoma and spindle cell sarcoma, and, second, to attempt to arrive t an accurate count of the cases presented to the present ime.

REPORT OF CASES

Case 1.—R. W. S., a white man aged 34, was first seen in eptember, 1935, complaining of a painful swelling above the ft testicle. For approximately one year the patient had been ware of a small mass above the left testicle, which had not been ssociated in onset with any injury. The tumor had not inreased in size from the time of its discovery until six to eight veeks before admission, when it seemed to increase rapidly. Pain nd soreness in the left scrotum had been present for only three veeks before the patient sought medical advice. No discoloraion of the overlying skin or tenderness on self-palpation had een observed. A trocar had been inserted into the swelling by nother physician, but no fluid was obtained and the tumor did ot transilluminate. Except for the fact that the patient's wife had been hospitalized intermittently during a five-year period for pulmonary tuberculosis, the past and family histories were noncontributory.

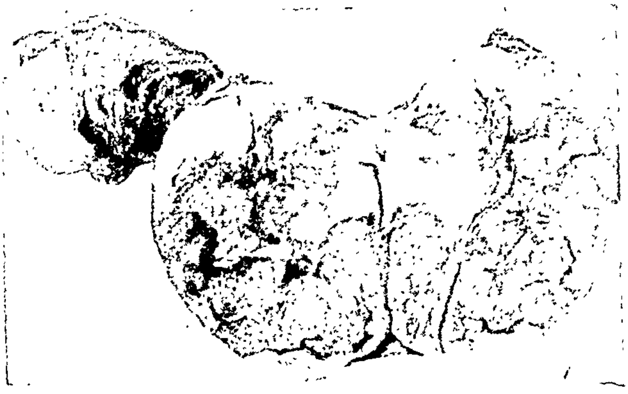


Fig. 1.—Left testicle and tumor removed from R. W. S. (Case 1).

The general physical examination was essentially noncontributory. The examination of the external genitalia revealed a large, rounded tumor, 7 by 5 cm. in size, smooth in outline, and apparently semifluctuant in character, located in the tissues of the left spermatic cord 2 cm. above the testicle. The mass was freely movable, and attached to the spermatic cord only. No inguinal adenitis was present, and the testicle apparently was normal in every respect. The clinical diagnosis was tumor of left spermatic cord.

Surgery was performed Oct. 2, 1935. Through an elliptical incision, made to remove excess skin, the tumor was easily dissected to its attachment to the cord. The blood supply of the testicle passed through the tumor in such a way that it was impossible to isolate and dissect the vessels free. Hence, with the patient's consent, the left testicle was removed with the tumor (Fig. 1). The histological diagnosis of the tumor was spindle cell sarcoma of the left spermatic cord. A roentgenogram of the chest made Oct. 8, 1935, showed no evidence of metastasis. The serologic findings and results of other laboratory examinations were entirely noncontributory.

Nothing more was heard of the patient until word was received from his local physician in West Palm Beach, Fla., in February, 1949, requesting information about the character of the operation performed in 1935. His physician stated that the patient had been complaining of a nonproductive cough of eight months' duration, accompanied with some dyspnea and tightness in the chest. X-ray examination of the chest at that time revealed a smooth tumor mass about 12 by 12 cm. extending from the hilus of the left lung to the chest wall. There was no displacement of the heart, mediastinum, or trachea, and no atelectasis. During the years from 1935 to 1949, the patient led an active, normal life, and served in an active capacity in the United States Army during the war years, receiving an honorable nonmedical discharge. A clinical diagnosis of metastatic sarcoma of the left lung was made by his local physician, and hospitalization was advised.

The patient was admitted to the United States Naval Hospital at Bethesda, Md. During this hospitalization the chest showed the roentgenographic findings depicted in Figure 2. A letter from the naval hospital stated that the tumor board and chest surgeons felt that exploration of the chest was not warranted and that the patient had received, during a period of 25 days, 2,000 r x-ray therapy at 9 cm. over the area. The patient was discharged, returned to Florida, and subsequently was admitted to the Veterans Administration Hospital at Coral Gables, where he died July 31, 1949.

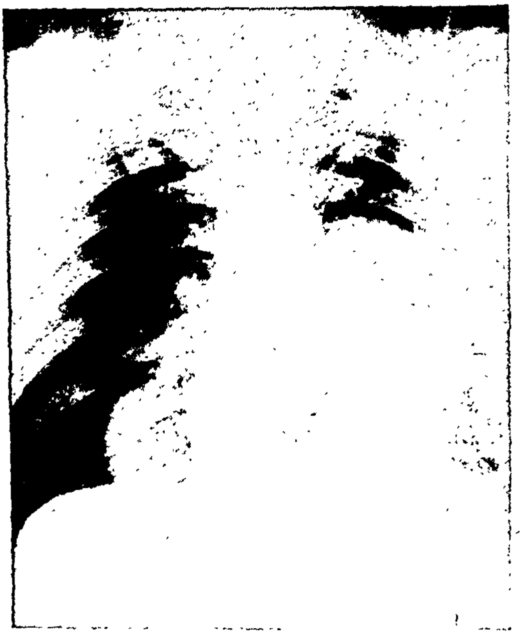


Fig. 2.—Chest roentgenographic findings in R. W. S. (Case 1) at time of his admission to the United States Naval Hospital at Bethesda, Md.

An autopsy was performed, and it was reported that a generalized metastatic fibrosarcomatosis was found in both lungs, stomach, liver, pancreas, left adrenal, and, by extension, in both kidneys and most of the abdominal and mediastinal lymph nodes. The ureters, bladder, prostate, and genitalia showed no evidence of metastatic involvement.

This case is most unusual since the patient lived almost 14 years after surgery, yet subsequently died of metastatic lesions, apparently from the original sarcoma. Whether the original tumor might have been classified as a fibrosarcoma by other pathologists, or whether, over the intervening years, especially with terminal intensive x-ray therapy, the histological structure of the invasive tumor was altered, is a matter of speculation.

CASE 2.—G. C. M., a white minister aged 71, was first seen in December, 1949, complaining of an enlargement of the left scrotal contents. He stated that a fatty cyst in the left scrotum about the cord had been removed at the old Presbyterian Hospital in Pittsburgh in 1937. Shortly after the operation another growth in the left scrotal compartment was noted, and this slowly increased during a period of years to the size of a small hen's egg. The mass gave rise to no symptoms, and the patient sought medical advice only to make certain it was not some form of cancer.

The general physical examination was not remarkable. The examination of the external genitalia revealed a nontender mass, approximately the size of a lemon, extending from the region of the left subcutaneous inguinal ring, and occupying the upper ird of the left scrotal compartment. It transilluminated poorly. ghtly medial to the inferior pole of this mass a separate, tense ass about the size of a small grape could be palpated. The testicle appeared normal, as did the epididymis and that portion of the vas deferens palpable between the testicle and the lower pole of the tumor. All other clinical and laboratory investigations were within the normal range.

On Dec. 12, 1949, the mass was exposed through an incision extending obliquely 5 cm. above and lateral to the external inguinal ring, and inferiorly into the superior portion of the scrotum for approximately 2 cm. The mass consisted of a large lipomatous structure. A careful search failed to reveal any associated hernial sacs. The operative note read in part: "As to the origin of the above-mentioned lipomatous growth, it is impossible to tell. However, there were multiple lobules of fat located around the spermatic cord." The smaller mass below the main growth proved to be a typical spermatocele. It was possible by careful dissection to denude completely the spermatic cord of the surrounding fatty tumor without sacrificing the blood supply and the testicle. The surgical specimen was examined, and the pathological report reads as follows: "A large, lobulated, fatty tumor separated into several distinct pieces. The largest of these measures 13 by 8 by 5 cm. Sections of the fatty tumor show the structure of a lipoma composed of mature fat cells supported by delicate connective tissue stroma. Pathological Diagnosis: Lipoma of the spermatic cord" (Fig 3).

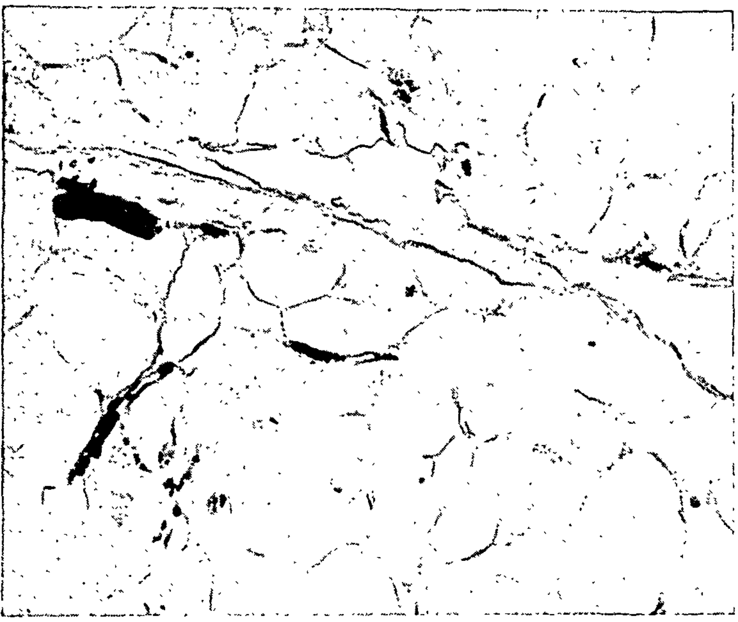


Fig. 3.—Histological section of the lipoma of the spermatic cord removed from G. C. M. (Case 2).

Subsequently a letter was sent to the Presbyterian Hospital in Pittsburgh requesting information as to the character of the tumor found in 1937. They stated that on Dec. 2, 1937, a large fatty tumor about the size of a tennis ball had been removed from the left scrotum. The pathological diagnosis made at that time read: "This section consisted of vacuolated lipomatous cells, all of which remained as the stroma framework. There was no evidence of malignancy." The final diagnosis at that time was lipoma of left spermatic cord.

A search of the literature has been made, and this case apparently has not been reported previously.

COMMENT

In reviewing the literature on tumors of the spermatic cord, a marked discrepancy is found in the total number of cases reported by various authors.

In 1936, Thompson [1] presented an excellent review of the literature, and, by adding 26 cases of tumors of the spermatic cord, brought the total number reported to 242. The next compilation was made by Schulte, McDonald, and Priestley [2] in 1939. They reported a case of neurofibroma, and added to the previous work of Thompson the following tumors they had found recorded since his report: a lipoma by Isnardi, a leiomyoma (benign) by Lapeyre and O'Daly, a dermoid by Delannoy and Demarez, a fibroma and a lipoma by Podetti, a lipofibromyxoma and a fibrosarcoma by Quinby, and a myxofibroma by Wolbarst. Counting their case reports, plus the eight cases cited above, nine cases should have been added to the previous total of 242, giving a total of 251. However, through some mathematical error, their total came to 247.

The next review of the literature was done by Strong [3] in 1942. He accepted the total of 247 reported by Schulte, McDonald, and Priestley, and presented a case of lipomyxoma plus five other cases seen at the Brady Urological Institute since 1915: lipomatosis of the cord, a fibrolipoma, a bilateral leiomyoma, a benign cyst, and a lipoma. In his paper he also added the following cases he had found in the literature from the time of Schulte, McDonald, and Priestley's previous compilation: a myxofibroma by Baiocchi (1938), a rhabdomyxofibrosarcoma by Miyagi (1938), a leiomyoma by Aguirre (1939), a teratoma of the cord by Graves, Kickham, and Buddington (1940), a polymorphous sarcoma by Scalfi (1940), a lipo-osteofibrosarcoma by Dreyfuss and Lubash (1940), and a fibromyxolipoma by Neal and Jolley (1941). He also mentioned an osteoma of the cord, reported by Pages in 1916, which he felt was previously overlooked in other compilations. In his compilation, therefore, he added a total of 14 additional cases. That number, when added to Schulte, McDonald, and Priestley's total number of 247, should have given a total of 261. However, in his summary he stated that to date 257 tumors had been reported. Thus, with correct additions, the 14 cases mentioned by Strong, when added to the corrected total of Schulte, McDonald, and Priestley, should have brought Strong's total number to 265.

Schulte, McDonald, and Priestley [2] mentioned, in their review of the literature from earlier times, two cases reported by Burr in 1934; as far as can be determined, they concluded that Thompson, in 1936, had included Burr's cases in his compilation. However, a complete review o Thompson's paper reveals no mention of Burr's cases Therefore, two other cases should be added to the tota of 265, bringing the total to 267.

---

1. Thompson, G. J.: Tumors of Spermatic Cord, Epididymis, and Testicular Tunics: Review of Literature and Report of 41 Additional Cases, Surg., Gynec. & Obst. 62:712, 1936.
2. Schulte, T. L.; McDonald, J. R., and Priestley, J. T.: Tumors of Spermatic Cord: Report of Case of Neurofibroma, J. A. M. A. 112:2405 (June 10) 1939.
3. Strong, G. H.: Lipomyoma of Spermatic Cord: Case Report and Review of Literature, J. Urol. 48:527, 1942.

For the sake of scientific accuracy we will list all cases found in the literature from the time of Thompson's report to the present:

1934—Burr, a fibroma and a sarcoma.

1936—Thompson,[1] 242 cases including his report of 26 cases from Mayo Clinic; Rolando, an unclassified solid tumor; Hisnardi, a lipoma.

1937—Quinby, a lipomyxofibrosarcoma and a fibrosarcoma; Podetti, a fibroma and a lipoma; Harkink, a myxofibroma; Delannoy and Demarez, a dermoid cyst; Wolbarst, a myxofibroma; La Peyre and O'Daly, a leiomyoma.

1938—Baiocchi, a myxofibroma; Miyagi, a rhabdomyxofibrosarcoma.

1939—Burlamaqui, a lipoma; Aguirre, a leiomyoma.

1940—Dreyfuss and Lubash, a lipo-osteofibrosarcoma; Scalfi, a sarcoma; Graves, Kickham, and Buddington, a teratoma.

1941—Neal and Jolley, a fibromyxolipoma; LoRe, a dermoid cyst; DeMitriu and Vasiliu, a fibrosarcoma; Graflin, a sarcoma.

1942—Prince,[4] angioendothelioma; Marshall,[5] a mixed tumor; G. H. Strong,[3] lipomatosis of the cord, a lipomyxoma, a fibrolipoma, a bilateral leiomyoma of the cord, a benign cyst, and a lipoma of the cord; Cole and Campagna,[6] an embryonic carcinoma; McCook,[7] a leiomyoma; C. H. deT. Shivers,[8] a rhabdomyxosarcoma.

1943—Zide,[9] a hemangioma.

1946—Grecco, two cases of fibromyoma.

1949—Perovano,[10] a reticulosarcoma.

1951—Brockow and Gummess,[11] a mesothelioma. They also reported a second case of teratoma. However, when we reviewed their article, the pathological examination on the second case was reported as malignant teratoma of the testis with infiltration into the epididymis and spermatic funiculus. We have not included it in this compilation as a true primary tumor of the spermatic cord.

Pages' osteoma of the cord (1916) reported by Strong[3] as having been missed in previous compilations.

Lowsley, Hinman, Smith, and Gutierrez[12] mention two other cases personally observed, but not yet published: a fibromyxosarcoma by Dr. G. McNeer of Memorial Hospital, New York, and a fibromyxolipoma by Dr. A. R. Stephens of New York Hospital and Cornell University Medical College in 1942.

The assistance of the Library of the American Medical Association was requested in an effort to determine whether any cases of tumors of the spermatic cord had been filed since the last issue of the 1948 "Quarterly Cumulative Index Medicus" was printed. The only new cases that are filed for future volumes are those of Perovano, and of Brockow, and Gummess previously cited.

Thus, the total number of cases to the present time is 284. The two cases presented here bring the total to 286.

SUMMARY

Two additional cases of tumors of the spermatic cord are presented: the first, a spindle cell sarcoma; the second, a lipoma. The first case is interesting because of the unusually long time of survival, almost 14 years after surgery, with ultimate death from long-delayed metastases. An attempt has been made to total accurately the number of cases reported to the present time. The two cases presented in this paper bring the total number up to 286.

Repetition of the clinical signs, differential diagnosis, and symptomatology of tumors of the spermatic cord, which can be found in any standard text, has been omitted. The difficulties encountered in compiling accurate statistical data stress the need for investigators to analyze critically previous reports and additions to the literature.

1300 Kuhl Ave. (Dr. Orr).

4. Prince, C. L.: Malignant Tumors of Spermatic Cord: Brief Review with Presentation of Case of Angio-Endothelioma, J. Urol. **47**: 793, 1942.

5. Marshall, V. F.: Tumor of Spermatic Cord: Report of Case, J. Urol. **48**: 524, 1942.

6. Cole, A. V., and Campagna, E. A.: Report of Case of Embryonic Carcinoma (Seminoma) of Spermatic Cord, J. Indiana M. A. **35**: 67, 1942.

7. McCook, W. W.: Leiomyoma of Spermatic Cord: Case Report, Am. J Surg. **56**: 499, 1942.

8. Shivers, C. H. deT.: Rhabdomyosarcoma of Spermatic Cord, J. Urol. **52**: 266, 1944.

9. Zide, H. A.: Tumors of Spermatic Cord: Report of Hemangioma, J. Urol. **50**: 255, 1943.

10. Perovano, A.: Reticulosarcoma of Spinal Cord, Arch. de Vecchi Anat. **12**: 803, 1949.

11. Brockow, J. L., and Gummess, G.: Tumors of Spermatic Cord, J. Urol. **65**: 136, 1951.

12. Lowsley, O. S.; Hinman, F.; Smith, D. R., and Gutierrez, R.: Sexual Glands of Male, New York, Oxford University Press, 1942.

REVIEW OF CURRENT TRENDS IN ACTIVE AND PASSIVE IMMUNIZATION

Aims C. McGuinness, M.D., Philadelphia

Since the beginning of World War II there have been many advances in the fields of active and passive immunization which justify a review of current trends in methods of protection in everyday use by the practitioner. While this paper is concerned primarily with immunization in the pediatric age group, immunization of adults will be discussed when recommendations differ from those advised for infants and children.

DIPHTHERIA, TETANUS, PERTUSSIS, AND SMALLPOX

With low carrier rates prevailing in all but a few areas of this country, the stimulus necessary to keep our population immune to diphtheria must be provided artificially. Thirty to fifty per cent of our adult population is susceptible[1] to diphtheria, and newborn infants of susceptible[2] mothers likewise are susceptible. Infants should be protected as soon as feasible.

Pertussis still is a severe and prevalent disease to which most newborn infants are susceptible, and they should receive early protection.

Tetanus toxoid provides one of the most effective immunizing agents yet developed. It is well tolerated, and the response in young infants is excellent. Everyone should be actively immunized against tetanus.

Read before the Section on Pediatrics at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

From the Departments of Pediatrics, School of Medicine and Graduate School of Medicine, University of Pennsylvania, and The Children's Hospital of Philadelphia.

[1] Diphtheria Susceptibility and Immunization, Bull. U. S. Army M. Dept. **76**: 104-108 (May) 1944. Karelitz, S., and Moloshok, R. E.: Immunity to Diphtheria in Army Personnel, War Med. **6**: 232-235 (Oct.) 1944.

[2] Brescia, M. A.: Diphtheria Immunity in Infancy Including Comparative Study of Schick Test in 200 Mothers and Their Infants, Arch. Pediat. **59**: 513-524 (Aug.) 1942.

Smallpox in this country is rare, but we can hazard no risk in permitting our population again to become susceptible.

If it can be assumed, therefore, that all children should be immunized against diphtheria, pertussis, tetanus, and smallpox, and at the earliest possible age, there remain only the questions as to when and with what agents these immunizations should be accomplished.

Many physicians have been slow to accept the now established fact that a high percentage of susceptible infants respond well to primary immunization against diphtheria when the initial injection is given as early as the second or third month of life.[3] The fact that those infants possessing maternally transferred antibody do not respond as well to diphtheria toxoid given early is more of academic than practical interest. They are immune while carrying maternal antibody, and their antitoxin levels will rise sharply with a single stimulating dose of toxoid given between the 9th and 18th months.

A number of investigators have shown that a high percentage of young infants attain protective levels of antipertussis antibodies from vaccine administered in the early months, particularly if the vaccine is mixed with alum or alum toxoids.[4]

uch has been accomplished since World War II purification of toxoids.[4a] Diphtheria toxoid availoday may be 70% pure as compared with the to 25% pure material of a few years back. Present toxoids also contain far less alum than the older antigens. Because of the greatly superior antigenic response to alum precipitated or aluminum hydroxide adsorbed toxoids, these are preferred to the fluid antigens.

There is no evidence that reactions of infants and young children to currently available multiple antigens are in general severer than to single antigens. They have the great advantage of reduction of the number of injections and possibly in addition an adjuvant effect, one on the other. It would appear that the frequency of febrile reactions in children over 4 years, however, is greater with the use of multiple antigens than with single antigens, and for this reason single antigens are recommended for primary immunization and restimulation of older children.

On the basis of the foregoing comments, the following schedule is offered: Starting at 2 to 3 months of age, three doses of 0.5 cc. each of alum precipitated or aluminum hydroxide adsorbed diphtheria-tetanus toxoid combined with pertussis vaccine should be given monthly intervals. At 10 to 18 months 0.5 cc. should given and 0.5 cc. at 3 years of age.

Reactions.—Should reactions of more than mild i tensity—irritability with temperature elevations abo 102 F—occur after initial injections of triple antigen it is recommended that single antigens be employ thereafter. Since pertussis vaccine has been incriminat as a cause of encephalopathies,[4b, c] a child in whom convulsion develops after an initial dose of triple antig should not be given further pertussis vaccine in any for If the reaction to triple antigen was only of modera severity, it is recommended that saline pertussis vacci be injected beginning with a small dose, say 0.1 cc. o standard vaccine containing 15 to 20 billion organis per cubic centimeter, followed by weekly injections increasingly larger doses, based on tolerance, until a to of 80 to 90 billion organisms have been given.

In the same manner a trial dose of 0.1 cc. of diphthe toxoid should be injected. If this causes no serious re tion, it probably is safe to give 0.5 cc. several days lat followed in one month by a second dose of 0.5 cc.

Reactions to tetanus toxoid will be infrequent. Ho ever, after a reaction to the initial injection of tri antigen the conservative approach would be to proc as outlined for diphtheria toxoid.

As further precautions toward the avoidance of re tions: 1. Antigens should not be given in the presenc respiratory or other infections, or during very ac teething. 2. Antigens should be given deep subcuta ously or intramuscularly. The injection of antigen sho be followed with a small bubble (0.1 cc.) of air to cl the needle tract.

Rapid Immunization Against Pertussis.—In the p ence of a severe epidemic of pertussis it may be ad able to utilize saline pertussis vaccine at weekly, or e shorter, intervals in order to provide some protec against pertussis in a relatively short time. Subjec tolerance, three doses of 1 cc., 1.5 cc., and 1.5 cc saline vaccine containing 15 to 20 billion organisms cubic centimeter are recommended. Compensation the somewhat better and longer lasting levels of pro tion theoretically attained by injections given at thre four week intervals can be achieved through subseq booster doses of vaccine in isotonic sodium chlorid alum solution.

Active Immunization of Adults Against Diphtheri Because of previous sensitization by natural or arti contact with Corynebacterium diphtheriae or its p ucts, many older children and adults will react seve to even small doses of diphtheria toxoid. Because t sensitivities frequently are to the diphtheria toxin it reactions are not always eliminated through use of p fied toxoids. Older children and adults should rec Schick tests and Schick test controls prior to active munization, and those showing positive control should not receive toxoid. If an adult shows a pos Schick test and a negative Schick test control, the fol ing dosage schedule is recommended: 0.1 cc. of tox if no reaction, three to five days later 0.3 to 0.5 cc toxoid should be given; if no reaction, three to four w later 0.5 cc. of toxoid should be given.

---

3. Bradford, W. L.; Day, E., and Martin, F.: Humoral Antibody Formation in Infants Aged One to Three Months Injected With a Triple (Diphtheria-Tetanus-Pertussis) Alum-Precipitated Antigen, Pediatrics **4**: 711-717 (Dec.) 1949. di Sant' Agnese, P. A.: Simultaneous Immunization of New Born Infants Against Diphtheria, Tetanus and Pertussis: Production of Antibodies and Duration of Antibody Levels in an Eastern Metropolitan Area, Am. J. Pub. Health **40**: 674-680 (June) 1950. Peterson, J. C., and Christie, A.: Immunization in the Young Infant: Response to Combined Vaccines, I-IV, A. M. A. Am. J. Dis. Child. **81**: 483-500 (April) 1951. Christie, A., and Peterson, J. C.: Immunization in the Young Infant: Response to Combined Vaccines, V, A. M. A. Am. J. Dis. Child. **81**: 501-517 (April) 1951. Peterson, J. C., and Christie, A.: Immunization in the Young Infant: Response to Combined Vaccines, VI-X, A. M. A. Am. J. Dis. Child. **81**: 518-529 (April) 1951.

4. (*a*) Pillemer, L.; Wittler, R. G.; Clapp, F. L., and Adams, J. N., Jr.: Immunochemistry of Toxins and Toxoids; Preparation of Purified Diphtheria Toxoid for Clinical Use, J. Immunol. **58**: 223-228 (March) 1948. (*b*) Byers, R. K., and Moll, F. C.: Encephalopathies Following Prophylactic Pertussis Vaccine, Pediatrics **1**: 437-456 (April) 1948. (*c*) Toomey, J. A.: Reaction to Pertussis Vaccine, J. A. M. A. **139**: 448-450 (Feb. 12) 1949. (*d*) Fraser, D. T., and Halpern, K. C.: Antitoxin Level in Children After Toxoid, abstracted, Canad. Pub. Health J. **28**: 41 (Jan.) 1937.

Booster or Stimulating Injections of Diphtheria Toxoid, Tetanus Toxoid, and Pertussis Vaccine.—Satisfactory diphtheria antitoxin levels persist for three to four years following primary immunization.[4d] Booster or stimulating doses should therefore be given at approximately three to four year intervals. It has been demonstrated that once a person has had a satisfactory basic immunization against diphtheria incredibly small amounts of antigen are required for restimulation, even the small amount of antigen used in a Schick test (about one-forty thousandth of a standard immunizing dose) frequently converts a positive Schick test to a negative one.[5] Therefore, in children immunized in infancy it would seem proper to give 0.1 cc. of toxoid every four years until 12 to 14 years of age. It should be remembered that in older persons severe reactions may develop after injection of as little as 0.1 cc. of diphtheria toxoid.[1]

It has been shown that if more than four years have elapsed since basic immunization against tetanus or since a booster injection has been given, the rate of recall is lengthened.[6] Booster doses of 0.5 cc. of tetanus toxoid, therefore, should be given immediately after a wound and routinely at approximately three-year intervals. A wound booster, of course, acts as a routine booster. If four years or more have elapsed since a wound or routine booster injection, it is recommended that 1,500 to 3,000 units of antitoxin be given in addition to the booster injection of toxoid, employing different syringes for these injections. In very severe massive woundings it may be advisable to give antitoxin in addition to toxoid regardless of intervals since previous booster, since in such cases the incubation period of tetanus may be remarkably short (24 to 48 hours).[6] Fluid tetanus toxoid elicits a somewhat more rapid recall than does alum precipitated tetanus toxoid.

A fairly high degree of protection against pertussis exists for three to four years following primary immunization.[7] After known close exposures 1.0 cc. of saline vaccine (15 to 20 billion organisms) is recommended for previously immunized children. Children of school age generally do not require routine boosters of pertussis vaccine, since frequent contact with the organism generally supplies sufficient stimulus for maintenance of protective levels of antibody.

Passive Immunization Against Diphtheria, Tetanus, and Pertussis.—Although penicillin should never be used without antitoxin in the treatment of diphtheria, it is felt that diphtheria-contact patients should be given a large dose of penicillin, removed from the source of infection, and observed closely, and that antitoxin should be administered only on evidence of beginning clinical infection. Caution must be exercised with respect to serum sensitivity.

Tetanus antitoxin (1,500 to 3,000 units) should be given after penetrating and dirty wounds to nonimmunized persons. As mentioned previously, antitoxin also should be administered in addition to toxoid if four years or more have elapsed since the last dose of toxoid in an immunized person.[6]

Nonimmunized infants exposed to pertussis should be given one or two 20 cc. injections of pertussis human immune serum or one or two 2.5 cc. injections of the gamma globulin fraction of this serum.

Smallpox Vaccination.—Smallpox vaccination is recommended during the first year of life and at approximately four-year intervals thereafter. Calf lymph vaccine is very unstable and deteriorates rapidly when not properly refrigerated. It is important to recognize that vaccination with weak or impotent vaccines may result in a reaction in susceptible persons which resembles the "reaction of immunity." It therefore is important to know that some typical "takes" are resulting from each batch of vaccine points. Vaccination should not be done in the presence of eczema or skin infections. Sites of vaccination should be covered lightly, if at all. Vaccination shields or dressings which exclude the air promote the growth of anaerobic organisms.

IMMUNIZATION AGAINST A MISCELLANEOUS GROUP OF DISEASES

The balance of this presentation will be devoted to brief remarks concerning a miscellaneous group of diseases in which active immunization is not a routine practice, but in which the problem of protection frequently arises.

Measles.—Immune serum globulin (gamma globulin) is well established as an effective agent in passive immunization against measles. It is recommended after known exposure, and, in general, modification of the disease is the desired goal. The material is available commercially and appears to be free of the causative agent of serum hepatitis. There is some evidence gamma globulin in large doses may reduce the severity of the disease even when administered early in the catarrhal stage before any rash has appeared.[8]

Up to the present time there has not been developed any successful vaccine for active immunization against measles.

German Measles.—There is now a great accumulation of evidence in support of the original reports of Gregg [9] and Swan and co-workers,[10] which indicated the hazard of German measles to the fetus of women in the first trimester of pregnancy. The disease has been transmitted to human beings as well as to rhesus monkeys by the use of filtered nasal washings, defibrinated blood, and serum taken in the acute phase of the disease,[11] and Habel [11b] penicillin for controlling hemorrhages in his nose and throat surgery. Of course, all the previously mentioned by-effects of penicillin refer to the systemic administration of the antibiotic. Used locally or in vitro, penicillin does not affect blood coagulation, as has been stated by Fleming [37] and later by Strausz.[38] It is also interesting to note that Ostro and I [39] found that penicillin does not hasten coagulation of hemophiliac blood.

---

[5] Wishart, F. O., and Reid, M. R.: Study of Diphtheria Antitoxin Response to Recall Doses of Specific Antigen, Canad. J. Pub. Health **38**: 131-140 (March) 1947.

[6] Miller, J. J., Jr., and Ryan, M. L.: Combined Active-Passive Reimmunization Against Tetanus in Previously Immunized Individuals: Experimental and Clinical Evidence, J. Immunol. **65**: 143-154 (Aug.) 1950.

[7] Kendrick, P.; Eldering, G., and Thompson, M.: Reinforcing or "Booster" Injection of Pertussis Vaccine in Previously Immunized Children of Kindergarten Age: Pertussis Field Series V, Am. J. Dis. Child. **72**: 382-388 (Oct.) 1946.

[8] Stokes, J., Jr.; Maris, E. P., and Gellis, S. S.: The Use of Concentrated Normal Human Serum Gamma Globulin (Human Immune Serum Globulin) in the Prophylaxis and Treatment of Measles, J. Clin. Investigation **23**: 531-540 (July) 1944.

[9] Gregg, N. M.: Congenital Cataract Following German Measles in Mother, Tr. Ophth. Soc. Australia **3**: 35-46, 1942.

[10] Swan, C., and others: Congenital Defects in Infants Following Infectious Diseases During Pregnancy, with Special Reference to Relationship Between German Measles and Cataract, Deaf-Mutism, Heart Disease and Microcephaly, and to Period of Pregnancy in which Occurrence of Rubella is Followed by Congenital Abnormalities, M. J. Australia **2**: 201-210 (Sept. 11) 1943.

[11] (*a*) Hiro, Y., and Tasaka, S.: Die Röteln sind eine Viruskrankheit, Monatschaft. f. Kinderheilk. **76**: 328-332, 1938. (*b*) Habel, K.: Transmission of Rubella to Macacus Mulatta Monkeys, Pub. Health Rep. **57**: 1126-1139 (July 31) 1942. (*c*) Krug, S., and Ward, R.: Rubella Without Rash: A Phenomenon Observed During Studies On Immunization: Proceedings of the Society for Pediatric Research, May 1951, A. M. A. Am. J. Dis. Child., to be published.

Weiner, Zeltmacher, and Shapiro [40] in a clinical study describe the thromboplastic properties of penicillin as not significant. On the other hand, their brief study is contradicted by the very extensive studies over a period of several years made by the distinguished surgeons Ochsner, DeBakey, and DeCamp and reported before the Thirteenth International Congress for Surgery, meeting in New Orleans, October, 1949. Their conclusions based on an analysis of 580 cases of thromboembolism are as follows [41]:

> The increased incidence of thrombo-embolism in the past two years may be explained in one of two different ways. The increase may be more apparent than real in that the diagnosis is more frequently made because of recent increased interest in the condition. On the other hand, it is probable that the increase is ual and not only apparent, because certainly at the Charity ital where the staff has had a continuing interest in this ct for many years, it is questionable that many cases were viously missed. A more likely explanation of the increased incidence of thrombo-embolism in recent years is that as a result of the almost routine administration of antibiotics to most if not all hospital patients, an increased coagulability of the blood occurs, favoring the production of venous thrombosis. Moldavsky, Haselbrook, and Cateno demonstrated that patients receiving penicillin injections exhibited an increased coagulability of their blood. This work was corroborated by Macht. More recently Macht and Farkas demonstrated that aureomycin when administered to patients and to animals caused a definite shortening of the blood coagulation time. Since there was no difference in the prothrombin time after the administration of aureomycin, it suggests that increased coagulability is due to changes in other factors necessary for blood coagulation.

I found in my animal experiments that streptomycin also exerts a definite thromboplastic effect in rabbits, and more recently Farkas and I [42] published a study both on animals and patients revealing that the wonder drug aureomycin also possesses thromboplastic properties. These findings were later corroborated by Waisbren and Glick [43] (Tables 5, 6, 7, 8). Of the newer antibiotics, chloramphenicol (chloromycetin®) is but mildly thromboplastic, while terramycin has no influence on blood coagulation at all.

OTHER THROMBOPLASTIC DRUGS

My findings in connection with my studies on digitaloid drugs and antibiotics made me surmise that probably other drugs employed in medical practice may exhibit a blood clotting tendency. This turned out to be exactly as anticipated.

Mercurial Diuretics.—Numerous experiments made with three of the widely used mercurial diuretics which are of great medicinal value in the practice of medicine, namely, mercurophylline injection (mercuzanthin®), mersalyl and theophylline (salyrgan®-theophylline), and meralluride ("mercuhydrin"), disclosed that they exert a profound effect on blood, accelerating its clotting. The results of these experiments have been published elsewhere and may at least partially explain cases of poisoning reported not infrequently after their use (Table 9).[44]

Antisyphilitics.—Numerous experiments performed on laboratory animals, chiefly rabbits and cats, were made with the following drugs: arsphenamine, neo arsphenamine, oxophenarsine hydrochloride (mapharsen®), bismuth arsphenamine sulfonate (bismarsen®) bismuth salicylate, and sodium bismuth tartrate, administered both by intravenous as well as intramuscular injections. All these antisyphilitic drugs markedly accelerated clotting of whole blood.[45] An interesting exception, however, was found in the case of bismuth sodium thioglycollate (thio-bismol®). This drug did not exhibit such a property, and this may be explained, in part at least, by the findings of De Takats in regard to thio compounds.[46] Not only the preceding antisyphilitic drugs but also other organic mercury compounds, as, for instance, oxymercurydibromfluorescein, were found to accelerate blood coagulation; this was also true even o small doses of mercuric chloride and mercuric iodide formerly employed in the treatment of syphilis. These findings may perhaps throw light on some of the un toward reactions occasionally noted after administration of antisyphilitic drugs, generally described as the so called Jarisch-Herxheimer reactions (Tables 10 and 11)

Purgative Drugs.—Many years ago Finesilver and I studying the effects of saline purgatives on the phenol sulfonphthalein kidney function test, found that these purgatives administered to animals and also to patien may cause such an extensive redistribution of body fluid as to affect the kidney excretion of the dye.[47] It w deemed worthwhile, therefore, to inquire whether admin istration of various laxatives or purgatives had any effe on the clotting properties of blood. The following we examined: castor oil, cascara, sodium sulfate, sodiu phosphate, psyllium seeds, and other purgatives. It w found that most of the purgatives tested produced n change in clotting time of whole blood, and even use large quantities of the saline purgatives only occasional shortened it in rabbits. One exception, however, was di covered. It was found that administration by stomac

---

37. Fleming, A., and Fish, E. W.: Influence of Penicillin on Coagulation of Blood, with Especial Reference to Certain Dental Operations, Brit. M. J. **2**: 242, 1947.

38. Strausz, I.: Effect of Penicillin on Blood Clotting in Vitro, Orvosok lapja **4**: 73, 1948.

39. Macht, D. I., and Ostro, M.: Thromboplastic Studies on Hemophilia, Science **103**: 402, 1946.

40. Weiner, M.; Zeltmacher, K., and Shapiro, S.: Effect of Penicillin upon Coagulability of Blood, Exper. Med. & Surg. **6**: 181, 1948.

41. Ochsner, A., and DeBakey, M. E.: Treatment of Post Operative Thrombosis and Its Sequelae, read before the 13th Congress of the International Society of Surgery, New Orleans, Oct. 10-15, 1949.

42. Macht, D. I., and Farkas, R.: Aureomycin and Blood Coagulation, Science **110**: 305, 1949.

43. Waisbren, B. A., and Glick, D.: Effect of Aureomycin on Heparin Concentration and Clotting Time of Human Blood, Proc. Soc. Exper. Biol. & Med. **75**: 476, 1950.

44. Macht, D. I.: Thromboplastic Properties of Some Mercurial Diuretics, Am. Heart J. **31**: 460, 1946.

45. Macht, D. I.: Thromboplastic Properties of Some Antiluetic Drugs, Federation Proc. **8**: 318, 1949.

46. De Takats, G.: Effect of Sulfur Compounds on Blood Clotting, Surgery **14**: 661, 1943.

47. Macht, D. I., and Finesilver, E. M.: Effect of Saline Purgatives on Absorption of Other Drugs, Bull. Johns Hopkins Hosp. **33**: 330, 1922. Macht, D. I.: Effect of Saline Purgatives on Absorption and Excretion of Phenolsulfonphthalein, J. Urol. **7**: 271, 1922.

ibe to rabbits of 1 to 2 gm. of crushed psyllium seeds as almost invariably followed by a decrease in clotting me.

Amphetamines.—More recently Dr. Golden and I [48] egan a study of the effects of amphetamine in regard to ood clotting. Animal experiments on rabbits and dogs vealed that small doses of amphetamine tended to celerate clotting of whole blood. This was true both r amphetamine itself, dextro-amphetamine, and varius brands of methylamphetamine. A series of tests were en made on patients and normal volunteers. The results tained agreed with the animal experiments. Use of both nphetamine and methylamphetamine was followed by decrease in clotting time, as studied by the Lee and hite method. No prothrombin time studies were made. hat the practical significance of these findings is, is as et too early to determine, but it is well to recall that nphetamine is contraindicated in cardiac cases and also cases of hypertension.

Our latest work, which is still in progress, has been on pium narcotics, but some definite results are already in and. Experiments on rabbits indicate that morphine, hylmorphine ("dionin"), and diacetylmorphine (herin) hasten clotting time, while codeine, papaverine, nd dihydromorphinone (dilaudid®) hydrochloride do ot.

PSYCHOSOMATIC FACTORS

Cannon [49] and his school in their classic work on the nfluence of major emotions on various functions of the ody in animals found that during rage the clotting time f blood was markedly shortened, and they attributed his effect to an increased secretion of epinephrine. More ecently Thomas Hoffmaster and I [50] carried such exeriments further and studied the physiological, pharmaologic, and biochemical properties of the blood of animals in rage. Our findings were briefly announced in the *ederation Proceedings*, but the complete work has not et been published. Among the properties of the blood tudied by us were blood clotting and prothrombin time. The marked effects on blood clotting of fear and rage in abbits and cats suggested an inquiry as to whether emoional factors would produce any effect on the blood lotting of healthy men and women. Accordingly, an extensive investigation has been put in progress by me on the blood coagulation of donors coming to the blood bank of the Sinai Hospital. The persons coming to the blood bank were classified by me and my co-workers from the psychological point of view into three groups: (1) persons who were apparently calm and unconcerned and who often have given blood for transfusions, (2) persons who were apprehensive and showed by their behavior more or less anxiety before the bloodletting, and (3) persons who on entering the bank room were frightened and in a highly nervous state. The results obtained on studying the blood clotting properties of all these persons were truly remarkable. It was found that the blood clotting time of normal and calm persons ranged usually from 8 to 12 minutes. In the case of those subjects who were apprehensive, the clotting time was shortened to four or five minutes, and in the highly nervous persons the figures obtained ranged from one to three minutes. It was surprising to find that such a profound influence was produced by ordinary acute and transient emotions in healthy persons, and yet that this phenomenon had not been studied to any extent before. Even the most comprehensive reference work of Flanders Dunbar [51] contains but little information on the subject. Fortunately, only very recently an important study by Schneider [52] appeared on psychosomatic influences and effects of emotional stresses on various physiological functions of patients which included measurements of blood clotting time, and his results agreed completely with my findings.

COMMENT

The aforementioned investigation furnishes an excellent illustration of an episode often occurring in the course of scientific researches—namely, the incidental or sometimes accidental discovery of a fact which turns out to be of greater importance than the original object of the research. Often, again, the phenomenon discovered is one which has been staring physicians in the face and yet has not been discerned by their mind's eye. In the present instance I was engaged in an experimental investigation concerning the general pharmacology of heparin. It was while comparing the toxicity of digitalis tincture in normal cats, on the one hand, and heparinized cats, on the other, that the progressive shortening of coagulation time during the assay of the drug was observed. This curious finding together with the equally remarkable observation made by Moldavsky and his colleagues concerning the clotting properties of penicillin served to render the medical profession "coagulation conscious," as attested by the numerous studies on the subject by investigators scattered over the globe which followed these announcements. The occasional contradictory findings reported by some of the workers are not at all unusual, and are but the exceptions which prove the rule and serve to emphasize the complexity of the subject. Here we are dealing with the physiology of blood coagulation, the mechanism of which is as yet not completely established. As already described previously, at least eight factors are concerned in this process, and even at this very time we find other conditions which may play a role in this process. Thus, Shinowara [53] reports a study on the effect of ultraviolet rays on the clotting of human plasma, and Ostro and I [54] have already published our studies on the influence of certain filtered x-rays in promoting the clotting of hemophiliac blood. Equally complicated is the effect of the digitaloid preparations and the various antibiotics on the clotting process reported by some observers because they were not dealing usually with chemically pure single principles. Furthermore, the so-called "second dimension" of pharmacodynamics teaches us that the effects of a given drug will vary with different species of animals, and may also be different for patients in disease than for healthy persons.

---

[48] Macht, D. I., and Golden, M.: To be published.

[49] Cannon, W. B., and Mendenhall, W. L.: Factors Affecting Coagulation Time of Blood: IV. Hastening of Coagulation in Pain and Emotional Excitement, Am. J. Physiol. 34: 251, 1914.

[50] Macht, D. I., and Hoffmaster, T.: Physiological, Pharmacological and Biochemical Studies on Blood of Animals in Rage, Federation Proc. 8: 102, 1949.

[51] Dunbar, F.: Emotion and Bodily Changes, New York, Columbia University Press, 1938.

[52] Schneider, R. A.: Relation of Stress to Clotting Time, Relative Viscosity and Certain Other Biophysical Alterations of the Blood in Normotensive and Hypertensive Subject, A. Res. Nerv. & Mental Dis., Proc. (1949) 29: 818, 1950.

[53] Shinowara, G. Y.: Coagulation Factors in Ultraviolet Irradiated Normal Human Plasma, Federation Proc. 10: 246, 1951.

[54] Ostro, M., and Macht, D. I.: A Pharmacological and Radiological Study of Hemophilia, South. M. J. 39: 860, 1946.

Perhaps the most gratifying finding in the present study is the beautiful provision of nature, insuring the human being against the hasty, unqualified, and promiscuous employment of various medicaments by the physician who is not familiar with the pros and cons of their pharmacologic reactions. This wonderful provision of nature is the wide margin of safety exhibited by patients under treatment with digitaloids, antibiotics, and other drugs possessing thromboplastic properties. Ordinarily, even wide fluctuations in clotting time may not visibly interfere with the treatment and convalescence of patients receiving these drugs. However, when the blood coagulating mechanism, to employ an expression from atomic physics, is in a "metastable" state, there may be a very real danger to health and even life threatening from the reckless administration of even a most valuable ug which tends to precipitate blood coagulation. The onal pharmacotherapist well appreciates the truth of e ancient poet: "I am fearfully yet wonderfully made" (Psalm 139, line 14).

It is amusing to note the almost personal resentment and umbrage shown by some medical men on hearing about the thromboplastic properties of digitalis and penicillin. They seemed to regard such claims as aspersions on the usefulness of these medicaments. Nothing could be further from the truth. There is no such thing as a perfect drug known to medicine. It is a banal axiom that every drug is also a poison and that the therapeutic value of every medicament can only be established after a complete and exhaustive familiarity with all its pharmacologic and physiological effects. Another source of great satisfaction in the present instance is the very simple remedy at hand with which to correct the previously described thromboplastic effects of important drugs. This by-effect can easily be averted by the judicious use of anticoagulants, such as heparin, bishydroxycoumarin (dicumarol®), and possibly some of the newer anticoagulants put on the market. The modern, rational pharmacotherapist and chemotherapeutist should still bear in mind the ancient dictum of Asclepiades: "Curare, tute, cito, et jucunde" ("To cure, safely, quickly, and pleasantly"). Whether in compound prescriptions or in today's so-called "needle therapy" he will administer his active drug or basis combined with or immediately followed by a suitable corrective to render it safe, perhaps also add an adjuvant to make it work more quickly, and finally whenever possible employ a pleasant vehicle to make it more agreeable.

The previously described experiences with blood clotting drugs lead me to the confident expectation of finding probably other medicaments which may exhibit thromboplastic properties to be borne in mind and guarded against in the practice of medicine. I am therefore continuing studies on the subject. It is interesting to note that one such drug has just been recently reported. I read in the *American Journal of Medicine* in a paper by Cosgriff, Diefenbach, and Vogt[55] that the new miracle drugs corticotropin (ACTH) and cortisone exert a d nite hypercoagulating effect on the blood; and Myer reports that corticotropin helps patients with a tende to bleeding.

These considerations, of course, apply equally app priately to the complications of blood coagulation p duced by psychosomatic agencies. Such factors, na rally, will call for not only suitable pharmacotherape procedures but also suitable psychotherapy. A more tensive discussion of this particular phase of the sub will be published by me elsewhere.

SUMMARY

Animal experiments and clinical studies reveal th number of drugs widely employed in medical and gical practice exert a thromboplastic or coagulation moting influence on the blood of animals and hu beings. Among the most important of these are the dig loid drugs and the antibiotics—penicillin, streptomy and aureomycin. Other such drugs are the well-kn and useful mercurial diuretics, the metallic antisy litics, amphetamine, and some opium derivatives. though there is usually a wide margin of safety for commodating fluctuations in coagulation time of blood, the previously described thromboplastic pro ties of our most useful medicaments should be born mind and prevented from exerting deleterious effect the administration of suitable anticoagulant agents. C less importance is the discovery that even in healthy sons, both male and female, acute apprehension, and intense worry markedly accelerate blood co lation and therefore call for suitable psychological as as pharmacological therapy.

3420 Anchentoroly Terrace.

---

[55] Cosgriff, S. W.; Diefenbach, A. F., and Vogt, W., Jr.: Hyper lability of Blood Associated with ACTH and Cortisone Therapy, Med. 9: 752, 1950.

[56] Myers, M. C.: ACTH Helps Patients with Tendency to Ble Science News Letter 58: 420, 1950.

New Disinfectants.—Phenols for general disinfection work hypochlorites for such purposes as the treatment of wate swimming baths, dairy and food utensils and for machinery are so efficient and so economic in use that for some new stance to emerge from the experimental stage and challenge on their own ground is an event of major importance ar terest. This challenge is occurring now with the quate ammonium compounds, and I believe that there is a very chance that they will succeed in certain fields, probably expense of the hypochlorites. These new compounds have c properties which the others do not possess, properties whicl tend to offset any adverse cost factors even on large scale tions. . . . The new substances passed the laborato perimental stage long ago and are already in reasonably scale production. . . .

The combination of detergency and bactericidal or bac static action gives them a special value in the washing of wo and it is these two properties also, together with the absen odour and taste (in the dilutions generally used) which these compounds out for use in the larger fields of hygiene as the cleansing and sanitation of milk churns and dairy u and machinery, and also the hands of the milker. They ar in the trial stage for the sanitization of eating and drinking sils, crockery and drinking glasses in restaurants, hotels and lic houses.—H. Berry, A Review of Disinfectants and Dis tion, *The Journal of Pharmacy and Pharmacology*, Nove 1951.

LICENSURE OR CERTIFICATION OF CLINICAL PSYCHOLOGISTS

Francis J. Gerty, M.D., J. W. Holloway, Jr.
and
R. P. Mackay, M.D., Chicago

Early in June, 1950, the Secretary of the Section on Nervous and Mental Diseases received a letter from Mr. J. W. Holloway, Jr., Director of the Bureau of Legal Medicine and Legislation of the American Medical Association, stating:

> So far as I can find out, the American Medical Association has expressed no official view as to whether psychologists should or should not be registered under state laws. The purpose of this communication is to solicit the aid of the Section on Nervous and Mental Diseases in establishing a medical viewpoint with respect to this problem. This bureau has been called on in a number of instances by state medical associations to express an opinion on proposed legislation and on the effectiveness of the laws that have already been enacted dealing with the regulation of psychology. This development is in an initial stage, and unless the medical viewpoint is adequately reflected in this stage, there is a very grave prospect of the situation developing in such a manner as might cause difficulties later on.

For the purpose of establishing a medical viewpoint on the legal recognition of clinical psychologists, the Section on Nervous and Mental Diseases of the American Medical Association at the meeting in San Francisco in 1950 authorized the appointment of a committee to study this problem and report to the Section during the 1951 session. The committee was also authorized to select an advisory group from the membership of the Section to aid in the preparation of the report, which is now being made.

The published material available for consideration by the committee might be described as being "too much and too little." The volume of material representing the viewpoints of psychologists on licensure, certification, and other germane matters was great, and some of it very important in content. It emanated from acknowledged leaders in academic, research, and applied psychology, both in independent presentations and through their official organizations. The medical viewpoint was not so well, or at least, so voluminously represented. It was expressed by psychiatrists almost exclusively and included chiefly committee reports of the American Psychiatric Association and the Group for the Advancement of Psychiatry. No committee, council, or section of the American Medical Association seems to have given any consideration to the subject. Until two months ago no comprehensive survey of licensure or certification of psychologists from the legal viewpoint had been published. In April, 1951, the *Columbia Law Review* published an excellent survey with conclusions and bibliography under the title "Regulation of Psychological Counseling and Psychotherapy." The committee had available for study the five state laws providing legal recognition for psychology—Connecticut (certification in 1945), Kentucky (certification in 1948), Virginia (certification in 1950), Georgia (licensing in 1951), Minnesota (certification in 1951). These laws have been analyzed as to content by one of us (J. W. H.), and the analysis has been prepared in the form of comparative tables of provisions. These tables were available for distribution at the section meeting. There was also available for study the act recently passed by the New York Legislature and the message of Governor Dewey giving his reasons for vetoing it (April, 1951).

It would be impossible to give an adequate review and analysis of all the material that was studied in making this report or to summarize the discussions and correspondence in the space allotted. To do so might also tend to confuse and bury the issues which are to be decided. Many queries concerning details will undoubtedly occur to the reader while reading this report. We shall not now attempt to forestall and satisfy them. Since the difference between certification and licensure may not be clear to all, we shall explain these terms, discuss briefly the principles upon which we think the medical viewpoint concerning legal control of psychotherapy should rest, and then conclude with recommendations for action which will express that viewpoint. It is in connection with protection of the public in matters of treatment of human ills, including treatment by psychotherapy, that there is need for expression of a medical viewpoint. Concerning practically everything else in the subject under discussion, we should probably be fully satisfied to accept the views of competent psychologists.

DEFINITIONS OF CERTIFICATION AND LICENSURE

"Certification" means that only those who satisfy certain minimal requirements of competency may assume the specified title Certified Psychologist, Qualified Psychologist, Applied Psychologist, and other specified titles. "Licensure" means that only those who have satisfied minimum standards of competency and have obtained licenses to practice may render professional services as Clinical Psychologists.

PRINCIPLES ON WHICH MEDICAL VIEWPOINT ON LEGAL CONTROL OF PSYCHOLOGISTS SHOULD BE BASED

The opening statement of the *Columbia Law Review* article[1] is:

> The sale of psychological aid to individuals, particularly in metropolitan areas, has become a lucrative profession. This development has resulted in an influx of private practitioners who undertake to render psychological counseling to the relatively normal, and psychotherapy to the emotionally distraught.

Report of a Committee of the Section on Nervous and Mental Diseases read before the Section at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

In the preparation of this report the committee was assisted by the following advisors: Dr. Spafford Ackerly, Louisville, Ky.; Dr. Daniel Blain, Washington, D. C.; Dr. Paul Huston, Iowa City; Dr. George Raines, Washington, D. C.; Dr. Philip Roche, Philadelphia; Dr. William Terhune, New Canaan, Conn.

[1] Regulation of Psychological Counseling and Psychotherapy, Columbia Law Review 51:474 (April) 1951.

BISHYDROXYCOUMARIN, ETHYL BISCOUMACETATE, AND 4-HYDROXYCOUMARIN ANTICOAGULANT NO. 63

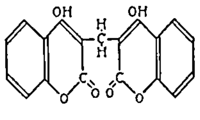
COMPARATIVE EFFECTS

Nelson W. Barker, M.D., Hugh H. Hanson, M.D.
and
Frank D. Mann, M.D., Rochester, Minn.

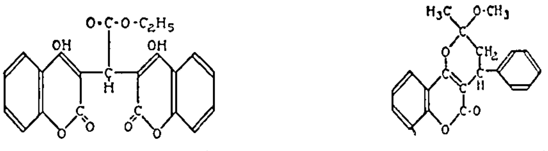
Bishydroxycoumarin (dicumarol®) has been used clinically as an anticoagulant for 10 years.[1] Recently two other coumarin compounds, ethyl biscoumacetate (tromexan®) [2] and 4-hydroxycoumarin anticoagulant No. 63 [3] (hereafter in this paper designated as anticoagulant No. 63), have been investigated experimentally and clinically with the hope that they might have advantages over bishydroxycoumarin for clinical use in anticoagulant therapy (Fig. 1). Like bishydroxycoumarin, these two coumarin compounds induce hypoprothrombinemia, which is defined for this paper as that coagulation defect indicated by prolongation of the one-stage prothrombin time. Also, as is the case with bishydroxycoumarin, other effects or untoward reactions not related to the coagulation defect have not been noted, except for rare mild allergic reactions and occasional mild gastrointestinal irritation.

It is well known that the response of the one-stage prothrombin time varies greatly among different patients who receive certain fixed doses of bishydroxycoumarin. Body weight, nutritional status, gastrointestinal disease or surgery, and variations in hepatic and renal function are some of the known factors which influence the response, but there are other unknown factors so that in general the quantitative response cannot be predicted. Similar variations in response among different persons are noted after administration of ethyl biscoumacetate and anticoagulant No. 63. With each of these three drugs it necessary to follow the response in each patient with t one-stage test of prothrombin time during the enti period of therapy, and it is necessary that this test be do daily during the first few weeks of therapy until the p tern of response is established. With all three drugs c tain fixed doses are used initially for induction of hyp prothrombinemia. Subsequently, the response of t prothrombin time must be the guide to the amount a frequency of the doses necessary for maintaining "therapeutic" but not excessive hypoprothrombinem

All three drugs are administered orally. Ethyl b coumacetate is more soluble and anticoagulant No.



3,3'-methylenebis (4-hydroxycoumarin)
Bishydroxycoumarin (Dicumarol)



3,3 carboxymethylenebis (4 hydroxycoumarin) ethyl ester
Ethyl biscoumacetate

2 methyl 2 methoxy 4 phenyl 5-oxo dihydropyrano (3,2-c) (1) ben
4 hydroxycoumarin anticoagulant No. 6

Fig. 1.—Structural formulas of bishydroxycoumarin, ethyl biscoum tate, and 4-hydroxycoumarin anticoagulant No. 63.

is less soluble than bishydroxycoumarin. These dif ences in solubility probably account for the difference rapidity and duration of action. The basic studies wl have been made to date indicate that it requires in doses of about five to six times as much ethyl biscoum tate and one-third to one-half as much anticoagu No. 63 to produce comparable degrees of hypoprothr binemia in an individual patient or animal. Rec mended daily doses for maintenance of therape hypoprothrombinemia are in the same proportions, greater frequency of dosage is required when ethyl coumacetate is used and less frequency of dosage v anticoagulant No. 63 is used.

CASES STUDIED AND METHODS

This paper is based on studies of 50 patients who given ethyl biscoumacetate [4] and 100 patients who given anticoagulant No. 63.[5] For purposes of compa data are included from 100 unselected patients were given bishydroxycoumarin. Approximately 80 the patients in each group had recent arterial or ve thrombosis, and dosages of the three drugs employed fo these patients were as follows: 300 mg. of bishydroxy coumarin on the first day and 100 mg. on the second da or 1,500 mg. of ethyl biscoumacetate on the first da

---

Read before the Section on Experimental Medicine and Therapeutics at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

From the Division of Medicine (Dr. Barker) and the Division of Clinical Laboratories (Dr. Mann), Mayo Clinic; Fellow in Medicine, Mayo Foundation, University of Minnesota (Dr. Hanson).

1. Allen, E. V.; Hines, E. A., Jr.; Kvale, W. F., and Barker, N. W.: The Use of Dicumarol as an Anticoagulant: Experience in 2,307 Cases, Ann. Int. Med. **27**: 371-381 (Sept.) 1947. Marple, C. D., and Wright, I. S.: Thromboembolic Conditions and Their Treatment with Anticoagulants, Springfield, Illinois, Charles C Thomas, Publisher, 1950.

2. Reiniš, Z., and Kůbík, M.: Klinische Erfahrungen mit einem neuen Präparat der Cumarinreihe, Schweiz. med. Wchnschr. **78**: 785-790 (Aug. 14) 1948. Deutsch, E.: Erfahrungen mit Tromexan, einem neuen Anticoagulans der Dicumarolreihe, Schweiz. med. Wchnschr. **79**: 1010-1015 (Oct. 22) 1949. Burt, C. D.; Wright, H. P., and Kubik, M.: Clinical Tests of a New Coumarin Substance: A Report to the Medical Research Council, Brit. M. J. **2**: 1250-1254 (Dec. 3) 1949. Solomon, C.; McNeile, H. J., and Lange, R.: Experience with the New Anticoagulant, B. O. E. A., J. Lab. & Clin. Med. **36**: 19-22 (July) 1950. Burke, G. E., and Wright, I. S.: Tromexan—3,3'-Carboxymethylenebis (4-Hydroxycoumarin) Ethyl Ester: Experimental and Clinical Properties, Circulation **3**: 164-170 (Feb.) 1951.

3. Ikawa, M.; Stahmann, M. A., and Link, K. P.: Studies on 4-Hydroxycoumarins: V. The Condensation of α,β-Unsaturated Ketones With 4-Hydroxycoumarin, J. Am. Chem. Soc. **66**: 902-906 (June) 1944. Battle, W. D.; Capps, R. T.; Orth, O. S., and Meyer, O. O.: The Effects of 4-Hydroxycoumarin Anticoagulant No. 63 upon the Prothrombin Time in Dogs and Human Beings, J. Lab. & Clin. Med. **35**: 8-15 (Jan.) 1950. Rotter, R., and Meyer, O. O.: Clinical Evaluation of 4-Hydroxycoumarin Anticoagulant No. 63, J. Lab. & Clin. Med. **36**: 981-982 (Dec.) 1950.

4. Barker, N. W.; Estes, J. E., Jr., and Mann, F. D.: Clinical Experiences with the Anticoagulant, Ethyl Biscoumacetate (N. N. R.), Proc. Staff Meet., Mayo Clin. **26**: 162-167 (April 25) 1951.

5. Hanson, H. H.; Barker, N. W., and Mann, F. D.: Clinical Experiences with 4-Hydroxycoumarin Anticoagulant No. 63 and the Antagonistic Effect of Menadione and Vitamin K_1, Circulation **4**: 844-853 (Dec.) 1951.

and 600 to 900 mg. on the second day or 100 to 150 mg. of anticoagulant No. 63 on the first day and 25 to 50 mg. on the second day. Thereafter the guide to dose and frequency of administration was the initial and subsequent response of the prothrombin time. Approximately 20% of the patients in each group received the drug for prophylaxis against postoperative thrombosis starting two days after operation. Initial doses given to these were approximately only two-thirds of the amounts given to the other patients, since these patients are usually more sensitive to the coumarin compounds. The entire amount of each drug given on any one day was given in a single dose.

Prothrombin time tests were done daily by the original Quick one-stage method on undiluted plasma using a system of controls developed for the purpose of reproducibility of results and employing an isotonic sodium chloride extract of dried rabbit brain as the thromboplastin.[6] With this technic and thromboplastin normal prothrombin times for hospital patients are considered to be 18 to 20 seconds. Prothrombin times of 30% and 10% dilutions of normal plasma are 27 and 58 seconds, respectively, and the arbitrary therapeutic range of hypoprothrombinemia when a coumarin compound is given is considered to be between 27 and 58 seconds. It must be emphasized in estimating degrees of hypoprothrombinemia that these values in seconds cannot be compared with those obtained by the same technic but with thromboplastins prepared in different ways or from different sources.

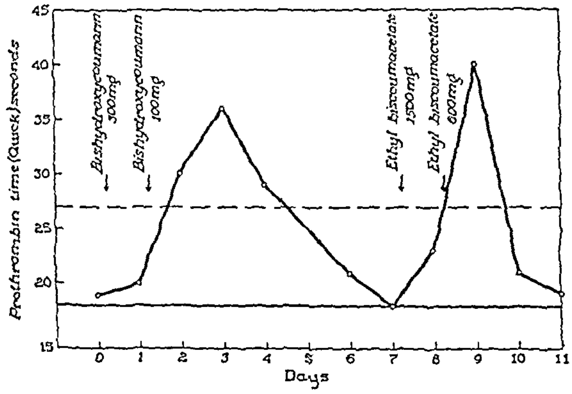


Fig. 2.—Comparative effects of equivalent doses of bishydroxycoumarin and ethyl biscoumacetate given to the same patient.

RESULTS

Ten patients were each given two doses of bishydroxycoumarin and two comparable doses of ethyl biscoumacetate during different study periods. The prothrombin times of all 10 rose and returned to normal more rapidly after use of ethyl biscoumacetate, as illustrated in Figure 2.

Eight patients were each given two or three doses of bishydroxycoumarin and later the same number of doses of anticoagulant No. 63 but only one-third to one-half the amounts in milligrams. The prothrombin times of all eight rose somewhat more rapidly, rose to higher levels, and fell to normal more slowly when anticoagulant No. 63 was given.

A further comparison of the rapidity with which therapeutic hypoprothrombinemia was induced in the patients who received the three different coumarin compounds is given in Table 1. These data emphasize the point that the initial response is variable among different persons, regardless of which drug is used (Fig. 3 and 4). A considerably larger percentage of those who received ethyl biscoumacetate responded satisfactorily in one day, but a more consistent type of response was obtained with the use of anticoagulant No. 63. Eight per cent of the patients who received bishydroxycoumarin and 10% of those who received ethyl biscoumacetate were highly resistant to the drug, but none were highly resistant to anticoagulant No. 63. Furthermore, five patients who failed to have prothrombin times in the therapeutic range after repeated doses of bishydroxycoumarin did so without difficulty when they were given anticoagulant No. 63.

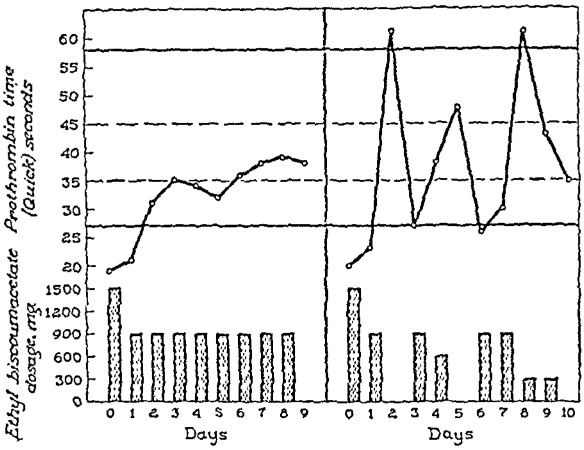


Fig. 3.—Effect of ethyl biscoumacetate on two patients showing variation in response of prothrombin time. Response on left indicates a relatively resistant patient, and response on right indicates a relatively sensitive patient with marked fluctuations of prothrombin time from day to day.

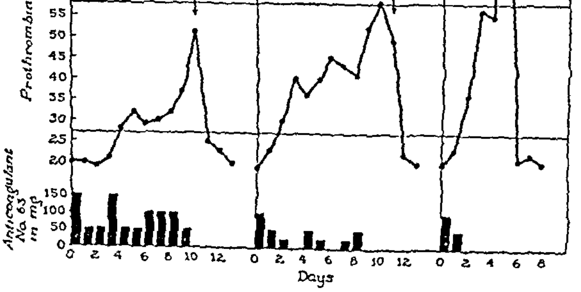


Fig. 4.—Variations in response of three patients to anticoagulant No. 63. In each instance the prothrombin time returned to normal rapidly after administration of vitamin K_1.

A comparison of the duration of hypoprothrombinemia after the last dose of the drug was given is shown in

---

[6] Hurn, M.; Barker, N. W., and Magath, T. B.: The Determination of Prothrombin Time Following the Administration of Dicumarol, 3,3'-Methylenebis (4-Hydroxycoumarin), with Special Reference to Thromboplastin, J. Lab. & Clin. Med. 30: 432-447 (May) 1945.

Table 2. Although there was considerable variation with each drug, duration of hypoprothrombinemia was definitely shorter after administration of ethyl biscoumacetate and longer after administration of anticoagulant No. 63 than after administration of bishydroxycoumarin. It should be mentioned that with each drug the prothrombin time was usually within a few seconds of normal one to three days before it actually became normal.

Excessive hypoprothrombinemia occurred during the first five days of treatment in approximately 20% of the patients in each group. During the first one to two weeks of anticoagulant therapy, it was somewhat more difficult to keep the prothrombin time within the therapeutic range with the use of ethyl biscoumacetate than with the use of bishydroxycoumarin because of greater fluctuations from day to day and difficulty in estimating the daily dose or advisability of omitting a dose particularly for the more sensitive patients. Somewhat more steady levels of hypoprothrombinemia were obtained with the use of anticoagulant No. 63 than with bishydroxyumarin, even though doses were usually given less uently.

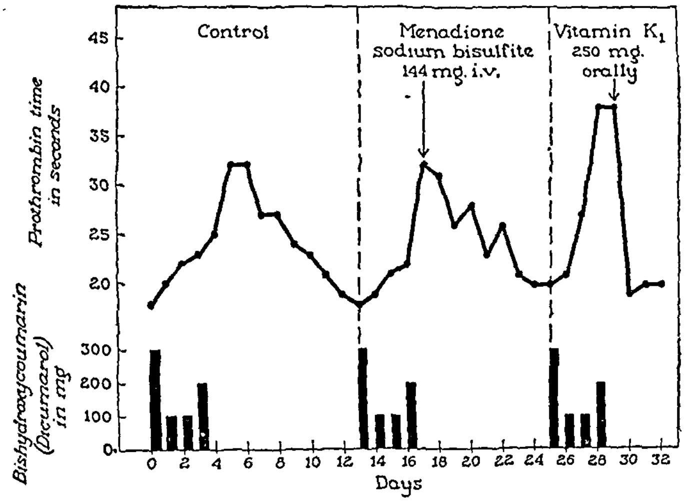


Fig. 5.—Comparative effects of menadione sodium bisulfite and vitamin K1 on the hypoprothrombinemia induced by bishydroxycoumarin in the same patient.

Both menadione sodium bisulfite and vitamin K_1 have been used to hasten the return of the prothrombin time to normal after it has been prolonged by use of bishydroxycoumarin.[7] The maximal effective dose of menadione sodium bisulfite is usually considered to be 72 mg. and is given intravenously. The maximal effective dose of vitamin K_1 is usually considered to be 500 mg. and may be given intravenously or orally. Comparative studies of the effects of these two antagonists indicate that in the doses used and even in doses more nearly comparable on the basis of molecular weights vitamin K_1 has a definitely more powerful effect (Fig. 5). Regardless of the length of the prothrombin time during treatment with bishydroxycoumarin, use of 500 mg. of vitamin K_1 will almost always bring it down to normal or near normal levels within 24 hours. Use of menadione sodium bisulfite will almost always bring an excessively prolonged prothrombin time back into the therapeutic range, but its effectiveness in hastening the return from the therapeutic range to normal is uncertain. After a single dose of 500 mg. of vitamin K_1, it has been noted that some patients may be refractory to the usual doses of bishydroxycoumarin for one to two weeks. Hence, menadione sodium bisulfite is the preferable antagonist (1) when an excessively prolonged prothrombin time needs to be brought back into the therapeutic range but not below it and (2) when a patient who is hypersensitive to bishydroxycoumarin has excessive hypoprothrombinemia after the usual induction doses. Vitamin K_1 is the preferable antagonist when it is desired to terminate the hypoprothrombinemia as rapidly as possible, for example, if bleeding occurs or emergency surgery becomes necessary.

TABLE 1.—*Initial Response*

Anticoagulant Drug	No. Patients	Days to Therapeutic Range,* % of Patients in Each Group: 1	2	3	4	Not Reached in 5 or More
Bishydroxycoumarin	100	19	43	16	14	8
Ethyl biscoumacetate........	50	40	44	2	4	10
Anticoagulant No. 63........	100	5	80	11	4	0

* After administration was started when prothrombin time was first in therapeutic range.

The differences in effectiveness of vitamin K_1 and menadione sodium bisulfite are even more marked when the hypoprothrombinemia is due to use of anticoagulant No. 63. Our studies of comparative effects of the two antagonists on each of 10 patients showed that the average shortening of the recovery period was only one day when menadione bisulfite was given but was almost five days when vitamin K_1 was given. Rapid restoration of the prothrombin time to normal or near-normal levels occurred in 24 hours in all but one of 26 other patients given 500 mg. of vitamin K_1 orally regardless of the duration of therapy with anticoagulant No. 63 or the degree of hypoprothrombinemia when the antagonist was given. Menadione sodium bisulfite was effective in bringing an excessively prolonged prothrombin time back into the therapeutic range in two-thirds of the cases in which it was used for this purpose.

TABLE 2.—*Persistence of Hypoprothrombinemia After Cessation of Administration*

Anticoagulant Drug	No. Patients	Days from Last Dose of Drug to First Normal Prothrombin Time: Range	Mean
Bishydroxycoumarin	50	2- 9	5
Ethyl biscoumacetate......................	22	2- 5	3
Anticoagulant No. 63......................	22	5-14	8

After cessation of the administration of ethyl biscoumacetate, the prothrombin time returned to normal or near-normal levels in one or two days in most cases

---

[7] Cromer, H. E., Jr., and Barker, N. W.: The Effect of Large Doses of Menadione Bisulfite (*Synthetic Vitamin K*) on Excessive Hypoprothrombinemia Induced by Dicumarol, Proc. Staff Meet., Mayo Clin. **19**: 217-223 (May 3) 1944. James, D. F.; Bennett, I. L.; Scheinberg, P., and Butler, J. J.: Clinical Studies on Dicumarol® Hypoprothrombinemia and Vitamin K Preparations: I. Superiority of Vitamin K_1 Oxide Over Menadione Sodium Bisulfite U. S. P. and Synkayvite® in Reversing Dicumarol Hypoprothrombinemia, Arch. Int. Med. **83**: 632-652 (June) 1949. Miller, R.; Harvey, W. P., and Finch, C. A.: Antagonism of Dicumarol by Vitamin K Preparations, New England J. Med. **242**: 211-215 (Feb. 9) 1950. Overman, R. S.; Sorenson, C. W., and Wright, I. S.: Effectiveness of Synthetic Water-Soluble Vitamin K Preparations in Bishydroxycoumarin-Induced Hypoprothrombinemia, J. A. M. A. **145**: 393-399 (Feb. 10) 1951. Fuller, B. F., and Barker, N. W.: The Effect of Vitamin K_1 Administered Orally on the Control of the Coagulation Defect Induced by Dicumarol, Minnesota Med. **34**: 326-328 (April) 1951.

Because of difficulty in reinducing comparable degrees of hypoprothrombinemia in the same patient with identical doses of this anticoagulant, it is difficult to determine the effectiveness of the antagonists. Use of menadione sodium bisulfite seems to accelerate slightly the return to normal, particularly if the prothrombin time is prolonged beyond the upper limit of the therapeutic range. It is questionable whether vitamin K_1 given orally is more effective, but if given intravenously it may be slightly more effective as an antagonist for ethyl biscoumacetate.

Experiments on animals have indicated that when extreme degrees of hypoprothrombinemia were induced and maintained with anticoagulant No. 63, less bleeding was encountered than when similar degrees of hypoprothrombinemia were induced and maintained with bishydroxycoumarin. With adequately controlled anticoagulant therapy comparable situations should not be encountered in human beings. Among the 100 patients treated with anticoagulant No. 63, we encountered one instance of major bleeding (from a recent surgical wound) and five instances of minor bleeding. Among the 50 patients treated with ethyl biscoumacetate, we encountered one patient who had major bleeding (also from a recent surgical wound) and two who had minor bleeding. Among the 100 patients treated with bishydroxycoumarin, 1 patient had major bleeding (also from a recent surgical wound) and 3 had minor bleeding. The major bleeding was controlled by appropriate treatment with antagonists in all three instances. Thrombosis of minor degree developed once during treatment with ethyl biscoumacetate, and no instance of thrombosis or embolism was encountered among the 100 patients during treatment with anticoagulant No. 63, or in the patients treated with bishydroxycoumarin. While the total number of cases reported in the literature in which these two new drugs have been used is too small as yet to warrant conclusions, it is probable that if comparable degrees of therapeutic hypoprothrombinemia are induced and maintained the use of either ethyl biscoumacetate or anticoagulant No. 63 will afford the same protection against thrombosis and be attended by approximately the same risk of bleeding as has been noted with the use of bishydroxycoumarin.

SUMMARY

Like bishydroxycoumarin, the new anticoagulants, ethyl biscoumacetate and 4-hydroxycoumarin anticoagulant No. 63, induce hypoprothrombinemia, which is of variable degree in different patients. For each of the three drugs one-stage determinations of prothrombin time are necessary as a guide to amount and frequency of dose in each individual patient. Ethyl biscoumacetate acts more rapidly and its effect disappears more rapidly when administration is discontinued. In our experience these potential advantages are offset to some degree by greater difficulty in maintaining the prothrombin time within the therapeutic range, particularly during the first two weeks of therapy because of a tendency to greater fluctuations in the hypoprothrombinemia from day to day.

Anticoagulant No. 63 produces a somewhat more consistent hypoprothrombinemia with less tendency to fluctuations from day to day, but the hypoprothrombinemia tends to persist for a longer period after administration of the drug is discontinued. Vitamin K_1 is a strong antagonist for both bishydroxycoumarin and anticoagulant No. 63 and is almost always effective in terminating the hypoprothrombinemia produced by these drugs in 24 to 48 hours. It is probable that if comparable degrees of therapeutic hypoprothrombinemia are established and maintained the three coumarin compounds which have been discussed will be equally effective in preventing thrombosis, and their use will be attended by the same small risk of bleeding.

102 Second Ave., S. W. (Dr. Barker).

CLINICAL NOTES

HEMORRHAGE FROM RUPTURED UTERO-OVARIAN VEINS DURING PREGNANCY

UNUSUAL SYNDROME COMPLICATING PREGNANCY

C. P. Hodgkinson, M.D., Detroit

Massive hemorrhage from ruptured utero-ovarian veins during pregnancy is a neglected and unusual cause of sudden maternal death. My attention was first directed to this problem in 1944, when a 20-year-old primipara experienced sudden pain in the right flank on the eleventh postpartum day. A large mass developed in this area. On resection this proved to be a large organized hematoma that extended from the brim of the pelvis to the level of the superior pole of the right kidney (Fig. 1).

My attention was again focused on this syndrome by the sudden death of a patient in 1947. After the uneventful spontaneous delivery of her fourth child the patient failed to react from a light gas anesthesia and died in shock two hours later. Autopsy disclosed the abdominal cavity contained 2,000 cc. of fresh blood. A large hematoma of an estimated volume of 1,000 cc. occupied the right posterior retroperitoneal space. A rent in the peritoneum with laceration of the pelvic veins was discovered in the right broad ligament. These two cases prompted a review of the literature, and a number of interesting phases of this problem became apparent.[1]

From the study it was evident that spontaneous rupture of the utero-ovarian veins was a rare complication of pregnancy. Only 72 authenticated cases had been reported. Sudden unilateral abdominal pain and shock were the important symptoms. Traumatic parturition was not considered an etiological factor, as the condition occurred as an incident of the prepartum, intrapartum, and postpartum periods. The anatomic distribution of the hemorrhage was of three types: retroperitoneal, intraperitoneal, and a combination of intraperitoneal and retroperitoneal. It was an extremely serious complication

---

From the Department of Gynecology and Obstetrics, Henry Ford Hospital.

[1] Hodgkinson, C. P., and Christensen, R. C.: Hemorrhage from Ruptured Utero-ovarian Veins During Pregnancy: A Report of 3 Cases and a Review of the Literature, Am. J. Obst. & Gynec. 59: 1112, 1950.

of pregnancy. The over-all maternal mortality was 49.3%. It was also apparent that the diagnosis usually was not made because the possibility of such a syndrome was not considered. Recently a patient under my care suffered such a complication of pregnancy; her case record is reported here to emphasize some of the earlier diagnostic signs.

REPORT OF A CASE

P. K., aged 30, para I, gravida II, was delivered of her first baby without incident in 1949. The second pregnancy was uneventful until the 36th week. About 3 p. m., while sitting quietly at home, she was suddenly struck with a severe pain in the left lower abdominal quadrant. Generalized abdominal soreness quickly developed. Urinary urgency was marked. There was no loss of consciousness, although she did feel faint. Reclining in bed afforded little relief. About 6 p. m. uterine contractions associated with increased abdominal pain became evident. She was admitted to the hospital about 8 p. m. Dec. 24, 1950.

The patient was acutely distressed. Rhythmic uterine contractions were observed at four-minute intervals. Between contractions the uterus relaxed. Rectal examination disclosed the cervix to be undilated and uneffaced. There was a moderate bloody vaginal discharge. The fetal heart was easily heard. There was no suggestion of fetal distress. The hemoglobin value was 13 gm. (82%) and the leukocyte count 7,000. Her chief plaint of pain in the left lower abdominal quadrant directed ntion to this region.

The exquisite tenderness could be demonstrated by palpation. The borders of this extremely painful area could be sharply defined. So outstanding was this finding that the area was outlined with ink (Fig. 2). Sharp rebound pain could be elicited in this region. It was also present over the entire abdomen. The enlarged uterus was an obstacle to abdominal examination, making it somewhat difficult to evaluate general abdominal tenderness. Manual displacement of the uterus from side to side caused the patient to cry out with pain. Blood pressure on admission was 112/72, and the pulse rate was 80 per minute. In the next several hours the patient was observed for evidence of shock and extension of the outlined area of tenderness.

In response to 50 mg. of meperidine (demerol®) hydrochloride, the uterine contractions subsided. About 1 a. m., Dec. 25, 1950, a cord of tender induration was palpated which extended laterally from the uterus through the midst of the outlined area of tenderness. This structure gradually became more apparent in the next hour. No change in pulse or blood pressure occurred. Clinical evidence suggesting excessive blood loss, such as restlessness, dyspnea, thirst, and faintness, was not observed. On the basis of the abdominal findings, a diagnosis of a major intra-abdominal pathological lesion was made, with strong evidence suggesting rupture of the left utero-ovarian veins.

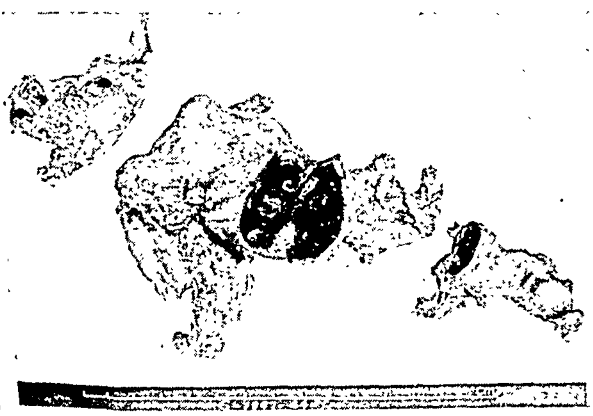


Fig. 1.—Hematoma excised from the right flank of the first patient encountered with hemorrhage from ruptured utero-ovarian veins during pregnancy.

Under 1% tetracaine (pontocaine®) hydrochloride spinal anesthesia the abdomen was opened. The peritoneal cavity contained a large quantity of fresh blood. Further investigation disclosed that the subserosal area of the left broad ligament and the left portion of the uterus were infiltrated with blood. The above-mentioned cord of induration was caused by edema and hemorrhage surrounding the ovarian veins as they traversed through the left broad ligament. The dextrorotation of the uterus displaced these vessels anteriorly, making them accessible to abdominal palpation. After delivery of the viable infant, a search was made for the source of hemorrhage.

A rent in the visceral peritoneum over the posterior surface of the uterus in the region of the left cornu was discovered. Just inferior to the insertion of the ovarian ligament active bleeding from a lacerated vein was observed. Occlusion of the defect was effected with four interrupted gut sutures. After evacuation of clots from the peritoneal cavity, the abdomen was closed. The estimated volume of the hemoperitoneum was 700 cc. Her postoperative course to recovery was uneventful.

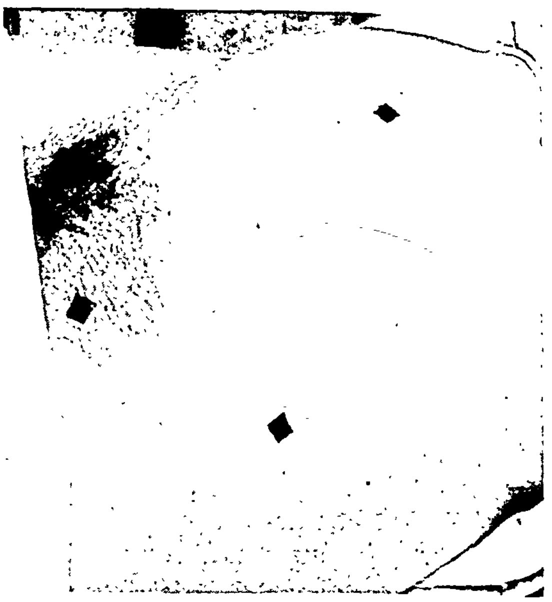


Fig. 2.—Skin outline of area of tenderness in patient reported here. This area was outlined with ink and transferred to tissue paper with three points noted: umbilicus, pubic tubercle, and anterior superior spine of the ileum. This paper form was then fitted to other patients until one was found with these points conforming to those of the patient. A form of black paper was used for contrast.

COMMENT

This case report illustrates only one variation in the symptoms manifested by this unusual syndrome as a complication of pregnancy. It is necessary, when this diagnosis is suspected, to keep in mind the several possible anatomic distributions of hemorrhage.

Bleeding confined to the posterior retroperitoneal spaces produces unilateral flank pain. Bleeding into the peritoneal cavity results in evidence of peritoneal irritation that quickly spreads to the entire abdomen. When a combination of intraperitoneal and retroperitoneal bleeding occurs, the symptoms and physical findings are mixed. The pain of labor may obscure the symptoms and shock from hemorrhage may be the first evident physical finding.

Errors in diagnosis may be avoided and maternal mortality lessened if this unique syndrome of pregnancy is more generally recognized.

SUMMARY

Spontaneous rupture of the utero-ovarian veins is a unique syndrome complicating pregnancy. A case reported in detail emphasizes the importance of early recognition of symptoms. Delay in establishing the diagnosis has resulted in maternal deaths which might have been preventable.

West Grand and Hamilton Blvd.

PERSISTENT COMPLETE HEART BLOCK IN DIPHTHERITIC MYOCARDITIS

REPORT OF A CASE

George C. Griffith, M.D.
and
Lawrence M. Herman, M.D., Los Angeles

The development of complete heart block in diphtheritic myocarditis usually foretells a fatal outcome. However, there are some exceptions to this rule.[1] When the patient does survive, the conduction defect usually disappears rapidly.[2] Most reports [3] of persistent heart block are based on speculation in cases of unexplained heart block with a history of diphtheria many years before. Nevertheless, there are five case reports [4] of severe conduction defects that developed during or soon after the diphtheria and persisted 4 to 10 years.

Abnormalities of the auricular beat caused by diphtheria are uncommon. An early report [5] of auricular fibrillation transiently complicated by complete heart block demonstrated that the fibrillation persisted six months after the onset, without other evidence of heart disease. In a series of 200 cases of diphtheritic myocarditis studied by electrocardiogram,[6] auricular fibrillation was found in six. In one there was transient auricular flutter, and in all conduction defects were noted. Of the two cases with recovery, the myocarditis had been complicated by a complete heart block in one. Three months after onset the electrocardiogram was almost normal, and there were no clinical signs of heart disease. There is a recent report [7] of a patient dying of diphtheritic myocarditis after showing complete heart block, auricular fibrillation, and auricular flutter and another report [1] of survival after auricular flutter and complete heart block, with return of the electrocardiogram to normal on the 47th day.

REPORT OF CASE

A 37-year-old white woman entered the communicable disease unit on May 26, 1949, the seventh day of her illness, with marked respiratory embarrassment due to nasopharyngotracheal diptheria. Before an emergency tracheotomy could be performed she had become apneic for a period of two to three minutes. Physical examination following the tracheotomy revealed a temperature of 103 F., a regular pulse with a rate of 120, and a blood pressure of 140/90. Aside from the membranous inflammation of the diphtheria no abnormalities were found.

The past history revealed that for a year prior to this illness the patient had been consuming large quantities of whisky daily, and dietary intake had been poor. There were no symptoms suggestive of rheumatic fever or hypertension.

Cultures from the throat and trachea were positive for Corynebacterium diphtheriae. She had received 25,000 units of diphtheria antitoxin the day before admission and was given an additional 40,000 units intramuscularly and 40,000 units intravenously on the day of admission. Administration of penicillin, 100,000 units every three hours, and a 72-hour continuous, slow intravenous drip of 5% dextrose in water was initiated at once.

An electrocardiogram taken on the second hospital day was normal (Fig. 1*A*). On the following day the blood pressure was 170/130.

On June 1 she received a blood transfusion to replace blood lost from the tracheotomy wound. The electrocardiogram taken that day showed left bundle branch block (Fig. 1*B*).

On June 6 the electrocardiogram indicated a complete heart block, with a regular auricular rate of 75 and a ventricular rate of 55 (Fig. 1*C*). A tracing on June 16 showed persistence of the block and also very low voltage of the QRS complex and diphasic T waves in lead CF_1 and inverted T waves CF_5 (Fig. 2*A*).

On June 22 she was found to have a bigeminal pulse and the first evidence of congestive failure in that her venous pressure was elevated by inspection; there were râles at both lung bases, and the liver edge was 2 fingerbreadths below the costal margin. She was placed on a low sodium diet. The electrocardiogram on that day showed complete heart block with idioventricular rhythm coming from two foci, producing bigeminy (Fig. 2*B*).

Beginning July 1 she experienced palatal and extraocular palsies with paresthesias of the legs. This was treated with large doses of B-complex vitamins and a 27-day course of dimercaprol injection ("BAL"). Except for mild, persistent tingling sensations in the legs the manifestations of this complication subsided within five weeks.

The electrocardiogram taken Aug. 23 showed an auricular flutter with an irregular ventricular rate of 34 (Fig. 2*C*).

On Sept. 9 (100 days after the blood transfusion) the patient became jaundiced. Laboratory tests revealed an icterus index of 50, thymol turbidity of 12 units, cephalin flocculation of 4+, albumin 3.9 gm., and globulin 2.5 gm. per 100 cc. By Oct. 10 the clinical and laboratory evidence indicated subsidence of the hepatitis. However, marked retention of salt and water was evidenced by orthopnea, pleural effusion on the right side, distended neck veins, enlarged liver, ascites, and ankle edema. The venous pressure was 290 mm. of water, and the arm-to-tongue circulation time was 20 seconds. Cardiac fluoroscopy revealed a generalized mild degree of cardiac enlargement.

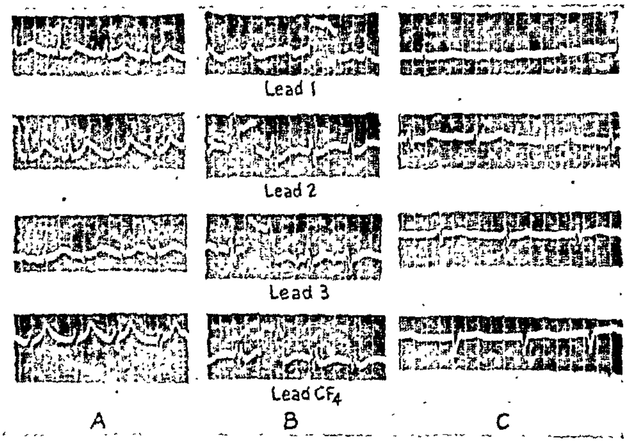


Fig. 1.—*A*, May 27, 1949, normal tracing; *B*, June 1, left bundle branch block; *C*, June 6, 1949, complete heart block. Auricular rate 75; ventricular rate 55; prolonged Q-T interval (0.52 second); low voltage of ventricular complexes.

Vigorous treatment with a mercurial diuretic had been instituted on Oct. 1, when her weight was 122 lb. (55.3 kg.). By Oct. 17 her weight had dropped to 99 lb. (44.9 kg.). Thereafter

---

The Los Angeles County Coroner's Office and Dr. Frederick D. Newbarr, Chief Autopsy Surgeon, cooperated in the collection of data for this report.

[1] Engle, M. A.: Recovery from Complete Heart Block in Diphtheria, Pediatrics **3**: 222-233, 1949.

[2] Friedberg, C. K.: Diseases of the Heart, Philadelphia, W. B. Saunders Company, 1949, p. 836.

[3] Butler, S., and Levine, S. A.: Diphtheria as a Cause of Late Heart Block, Am. Heart J. **5**: 592-598, 1930. Chamberlain, E. N., and Alstead, S.: Unusual Complication of Diphtheria, Lancet **1**: 970-971, 1931. Leys, O. G.: Heart Block Following Diphtheria, Brit. Heart J. **7**: 57-58, 1945. Read, J. M.: In discussion of Burnett, C., and Pietz, G.: Electrocardiogram in Acute Infections, J. A. M. A. **93**: 1125 (Oct. 12) 1929.

[4] Perry, C. B.: Persistent Conduction Defects Following Diphtheria, Brit. Heart J. **1**: 117-122, 1939. Beer, A.: Zur Frage-Dauerschädigung des kindlichen Herzens nach Diphtherie, Handbuch f. Kinderheilkunde **148**: 152-169, 1936. Sprague, H. B., and White, P. D.: High-Grade Heart Block Under the Age of Thirty. M. Clin. North America **10**: 1235-1250, 1927.

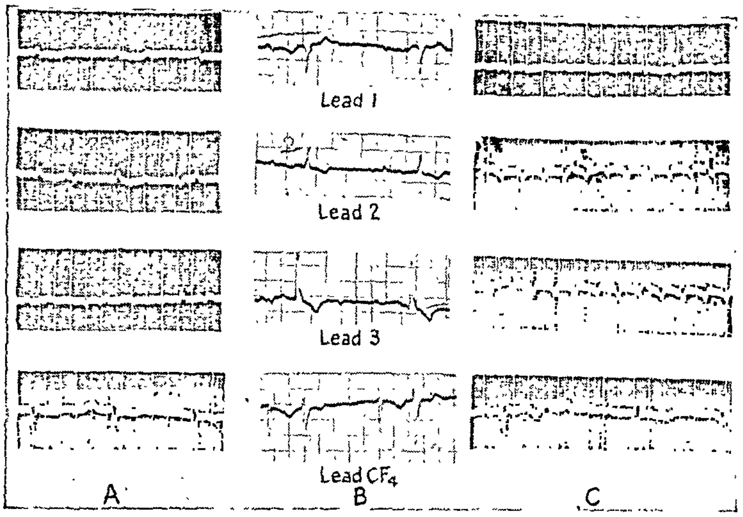
[5] Parkinson, J.: Auricular Fibrillation Following Complete Heart Block in Diphtheria, Heart **6**: 13-16, 1915.

[6] Neubauer, C.: Auricular Fibrillation and Auricular Flutter in Diphtheria, Brit. Heart J. **7**: 59-62, 1945.

[7] Boyer, N. H., and Weinstein, L.: Diphtheritic Myocarditis, New England J. Med. **239**: 913-919, 1948.

there was a gradual increase in weight despite continued treatment. Her usual weight had been 115 lb. (52.1 kg.).

On Oct. 24 the electrocardiogram showed no change from the auricular flutter with what appeared to be an irregular idioventricular rhythm. On that day quinidine and digitoxin therapy was instituted. By the afternoon of Oct. 26 she had received a total of 21 grains (1.3 gm.) of quinidine sulfate and 1.0 mg. of digitoxin. At 1 p. m. she became unconscious and was immediately examined by a physician, who was unable to detect heart sounds for an unstated period. She recovered with a convulsive movement. The first few heart sounds were grossly irregular and loud. An electrocardiogram taken soon after this episode showed the addition of frequent ventricular premature beats to the previous abnormalities (Fig. 3*A*). She has received no further quinidine or digitalis preparations.



g. 2.—*A*, June 16, 1949, complete heart block. Auricular rate 60, icular rate 56; further decrease of voltage of ventricular complexes; onged Q-T interval; sagging ST segment in leads 1 and 2; diphasic waves in leads 1 and CF_4. *B*, June 22, complete heart block with ventricular beats arising from two foci, producing bigeminy. *C*, Aug. 23, auricular flutter. Auricular rate 240, ventricular rate 34; very low voltage of QRS complex.

Cardiac catheterization was performed on Nov. 11 to determine whether there was an obstruction of the caval vessels which might have arisen from an undetected mediastinitis via the tracheotomy wound. The results are shown in the accompanying table, and they were interpreted thus: "1. There was no evidence of any intracardiac shunts. 2. The findings by cardiac catheterization rule out a superior vena cava obstruction. The systolic pressure was found elevated in the right ventricle, probably reflecting pulmonary hypertension."

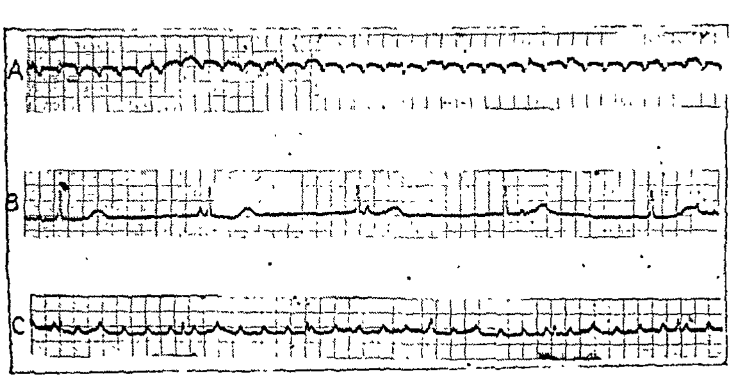


Fig. 3.—*A*, Feb. 3, 1950, lead 2, auricular flutter. Complete heart block. *B*, March 10, lead 2 (sensitivity of electrocardiograph greatly increased). Complete heart block. *C*, March 17, the auricular flutter returned.

On Nov. 9 she was discharged to the outpatient department. While she has been receiving ambulatory treatment, her activity has been greatly limited by dyspnea. Ascites has persisted despite a low sodium diet and intramuscular injections of mercurial diuretics three times a week. She has experienced faintness each time she changes from a sitting to a lying position.

Cardiac fluoroscopy and x-ray views of the chest on Dec. 3 revealed prominence of the right atrium and the inflow tract of the right ventricle. The superior vena cava was moderately dilated, and both pulmonary arteries were slightly dilated. Th lung fields were clear.

Electrocardiographic studies indicate that the mechanism o the auricular beat continues to change. On March 10, 1950, th flutter previously present had been replaced by a slow auricula beat arising from several different foci (Fig. 3*B*). One week late the auricular flutter had returned but with the P (or fibrillary waves opposite in contour from those of the former period o flutter (Fig. 3*C*). During these changes in the auricles, the ven tricles continued to beat at about the same slow, somewha irregular rate, and the ventricular complexes were of very lo voltage, with a long Q-T interval.

When examined on March 29, 1950, the patient appeare somewhat undernourished and weighed 112 lb. (50.8 kg.). Th pulse rate was 32, the blood pressure was 150/80, and she ex hibited moderate dyspnea when lying flat. The neck and arm veins remained distended when elevated. There was a spide nevus on the neck. The heart was not enlarged to palpation o percussion. The heart sounds varied in intensity. A Grade 1 poorly transmitted, systolic murmur was audible at the ape The lungs were normal. Shifting dullness was present in th abdomen, but the amount of ascitic fluid was less than on pre vious examinations. The liver was enlarged, mainly in the lef lobe, to 7 cm. below the costal margin. It was firm, nontende and grossly lobulated. There was no edema at the ankles. Th venous pressure was 320 mm. of water. The arm-to-lung circu lation time was 16 seconds, and arm-to-tongue time was 4 seconds. The thymol turbidity reaction was 3 units, the cephali flocculation was negative; the albumin 5.4 gm. and the globuli 2.8 gm. per 100 cc.

Data Obtained During Catheterization

Station	Pressure		Oxygen Sat., Vol. %	% O_2 Sat.
	Systolic	Diastolic		
Right ventricle	50	0	....	....
Right auricle	12	— 5	9.8 10.1	.... 56.5
Superior vena cava......	12	— 5	10.6 10.7	.... 60.6
Femoral artery	..	....	14.0 14.1	.... 80.0
Coronary sinus	12	—10	4.1 3.7	.... 22.3

Oxygen capacity = 17.58 vol. %

No change in her condition was noted on succeeding weekl examinations. On May 15, 1950, she died without warning whil conversing quietly with her brother. Her attending physician were not contacted, and the autopsy was performed by th coroner's office. Unfortunately, the autopsy surgeon was u aware of the clinical features of the case, and only a routir examination for cause of death was done.

Gross autopsy, by Dr. Victor Cefalu, revealed about 600 c of clear fluid in each pleural cavity, 150 cc. in the pericardi cavity, and about 3,000 cc. in the abdominal cavity. The lun were edematous. The heart was of normal size except for slight hypertrophy of the left atrium. The valves were thin ar pliable and appeared to be competent. The coronary syste showed no abnormality, and the musculature was grossly no mal. The liver showed slight chronic passive congestion. Tl abdominal organs were otherwise normal. The spleen w slightly enlarged, to about one and one-fourth times its norm size. The kidneys were slightly enlarged; the markings well pr served, and the surface smooth. The ovaries were surgica absent.

Single sections for microscopic examination were taken fro the lung, heart, liver, kidney, and spleen. These were interpret by Dr. Hugh A. Edmundson. He reported that the only se tion of myocardium available was apparently taken from th left ventricle and included the entire thickness. No changes we seen in the epicardium. The vessels were free of sclerosis. My cardial fibers were of normal size, and those beneath the e cardium showed no change. Only near the endocardium w there any changes present. These consisted of thickening of t connective tissue, especially around the veins. In some of th areas there had been obvious replacement of muscle fibers, a occasionally a few hyaline-appearing amorphous masses, wh undoubtedly represented remnants of muscle, were seen (F

4). Taking the section as a whole, it appeared that less than 3% of the muscle was involved in any recognizable microscopic change.

In the lung there was hyperemia of the capillaries, veins, and arteries. The alveoli contained great numbers of pigment-filled macrophages. The alveolar septa appeared only slightly thickened.

There was a normal arrangement of the central vein and periportal spaces in most of the lobules of the liver. A few lobules were partly replaced by loose connective tissue containing widely spaced, thin-walled vascular channels. Many of the periportal spaces had increased amounts of connective tissue containing a few round cells and a moderate degree of proliferation of the bile ducts. The central veins and sinusoids were moderately distended, indicating congestive failure. The histological appearance was that of healed hepatitis in which there had been some fibrous replacement of necrotic liver tissue.

In the kidney there was a pattern of scarring which was somewhat sheet-like in character just beneath the capsule and which extended through the remainder of the cortex in a linear fashion, leaving parallel rows of more or less uninvolved renal parenchyma. Beneath the cortex there were many hyalinized glomeruli and a moderate degree of round cell infiltration. In the linear areas of scarring, no cellular infiltration was apparent. Several tubules in these areas were filled with pigmented casts and an occasional one with calcified material. The arteries and arterioles appeared essentially normal, except that where they are involved in the areas of scarring they appeared somewhat sclerotic and distorted. The glomeruli outside the areas of scarring appeared normal except for an occasional one that was hypertrophied. The same was true of the tubules. There had obviously been greater damage to the kidney near the capsule. This type of renal involvement is not characteristic of the common forms of renal disease and most probably represents healed lower nephron nephrosis.

COMMENT

Survival after major conduction defects in diphtheritic myocarditis has been explained [1] on the assumption of localization of the toxin in only a small area of the heart which includes the atrioventricular node or its bundles. In this case there was ample clinical evidence of widespread cardiac injury in the low voltage of the ventricular complexes and the persistent evidence of cardiac failure. It is most unusual for the heart to withstand such damage. It was assumed that a large portion of the myocardium had been replaced by fibrotic connective tissue. Although such changes were minimal in the section available for microscopic study, it may not have been representative, especially since the scars are usually focal. The diffuse damage to the conductivity and the changes in the irritability of the heart may be correlated with the subendocardial localization of the disease process as seen on the section. These changes undoubtedly culminated in death through asystole.

The usually accepted pathological changes in diphtheritic myocarditis [8] are an initial hyaline and granular degeneration, followed in turn by cellular infiltration and fibrotic scarring with hypertrophy of adjacent muscle fibers. Occasionally fatty degeneration is seen. These fibrotic changes ordinarily are progressive up to about the fifth week. There seems to be no specific affinity for the conductive mechanism. The end result may be either complete regeneration or varying degrees of fibrosis. In the few cases in which examination was made after relatively prolonged illnesses, small focal scars were seen with occasional small mural thrombi. There has been no previously reported pathological examination in a case continuing to exhibit the effects of the myocarditis for the 12-month period observed in the present case.

The changes found in the liver are those expected from the complication of homologous serum hepatitis which had occurred eight months before death. The fibrosis was not generalized enough to explain the predilection to accumulate fluid in the abdominal cavity rather than in the subcutaneous tissues of the legs. There were no clinical occurrences during the period of observation or in the carefully elicited past history to account for the unusual microscopic appearance of the kidneys. It is felt that the changes were not diffuse enough to lead to renal failure.

The nearly disastrous results from the use of quinidine and a digitalis preparation in the case reemphasizes the rule that these drugs are not indicated in the myocarditides. However, Engle [1] reports favorable results from digitalis in diphtheritic myocarditis and recommends more frequent use of this drug. We feel that digitalis provides no beneficial effects in this condition and may serve to further embarrass the conduction system or increase the irritability of the myocardium to produce ventricular arrhythmias. Quinidine, of course, is contraindicated in complete heart block. At the time it was employed in this case the rhythm was interpreted as auricular flutter with varying ventricular response. We now believe that there was a complete heart block with idioventricular rhythm and that the period of asystole was caused by reduction of myocardial irritability by the quinidine. However, the possibility remains that there was ventricular fibrillation during the period when no heart sounds were heard.

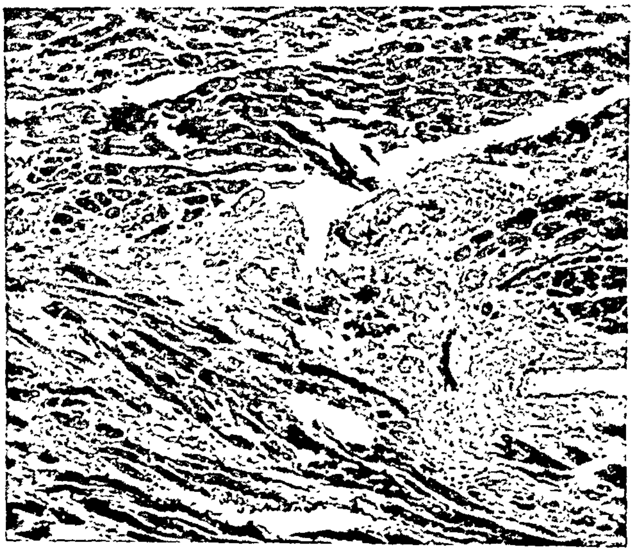


Fig. 4.—Myocardial fibrosis one year after diphtheria.

The alterations in rhythm have been interpreted [9] as indicating inactivation of both the sinus and the atrioventricular nodes by the diphtheritic toxin. Various ectopic foci in the atria are competing for dominance and when a focus becomes irritable enough to initiate impulses at a speed of about 250 a minute the flutter pattern is established. Since changes in auricular irritability continue, it is probable that the reaction to the insult from the toxin has not become quiescent.

---

[8] Ch'in, K. Y., and Huang, C. H.: Myocardial Necrosis in Diphtheria, Am. Heart J. **22**: 680-701, 1941. Gore, I.: Myocardial Changes in Fatal Diphtheria: Summary of Observations in 221 Cases, Am. J. M. Sc. **215**: 257-266, 1948. Warthin, A. S.: The Myocardial Lesion of Diphtheria, J. Infect. Dis. **35**: 32-66, 1924.

[9] Prinzmetal, M.: Personal communication to the authors. Prinzmetal, M.; Corday, E.; Brill, I. C.; Sellers, A. L.; Oblath, R. W.; [illegible] . A., and Kruger, H. E.: Mechanism of the Auricular Arrh[illegible]ation **1**: 241-245, 1950.

SUMMARY

An unusual case of diphtheritic myocarditis is presented with autopsy findings. The unusual features are (1) variations in the conduction and irritability of the heart continuing for many months after the acute process; (2) persistent clinical evidence of myocarditis, namely, low voltage of QRS complexes, arrhythmia, and chronic congestive failure, and (3) survival for 12 months despite a complicating hepatitis, with death eventually from sudden cessation of heart beat—a direct result of the diphtheritic damage. The autopsy findings, although somewhat incomplete, showed a relatively small amount of degenerative change in the myocardium.

Cardiology, Box 25, Los Angeles County Hospital, 1200 N. State St. (Dr. Griffith).

THROMBOPENIC PURPURA FOLLOWING USE OF DIGITOXIN

Herbert Berger, M.D., Staten Island, N. Y.

Blood dyscrasias are common complications of the use of numerous medicaments. Recently, severe thrombopenic purpura developed in a patient under my care who had rheumatic carditis. Ultimately this hemorrhagic state was shown to be caused by digitoxin. A thorough survey of the literature and of several papers on digitoxin toxicity [1] failed to reveal a single instance of the association of thrombopenic purpura with use of digitoxin.

REPORT OF A CASE

The patient, a woman, aged 70, was first seen at the clinic on March 18, 1950, with complete congestive heart failure. She had had several attacks of a disease called "inflammatory rheumatism" during her childhood, but careful questioning disclosed that in the attacks several joints were swollen, red, and painful in succession, symptoms indicating typical migrating polyarthritis. She was treated, as was the custom 50 years ago, with poultices and pills and was allowed out of bed as soon as the joint inflammation subsided. On one occasion, at about the age of 16, she apparently had to return to bed several times when the disease reappeared after it had apparently been cured. She had had no idea that her heart was damaged, having had no symptoms until one year before her admission. At that time shortness of breath and a cough developed, which were treated with powdered digitalis leaf and expectorants. She had no treatment during the ensuing year, but she found herself needing more rest, becoming increasingly short of breath, and, finally, in the weeks before admission, her legs had been swollen.

Physical examination disclosed all of the peripheral evidences of cardiac failure, with edema to the thighs, hepatomegaly, ascites, and rales at the bases of both lungs. She was distinctly cyanotic and was so dyspneic that she paused for a breath after speaking two or three syllables. The pulse rate was rapid, about 156 per minute and totally irregular, with an almost inaudible double murmur at the apex. Fluoroscopy disclosed a generalized enlargement affecting particularly the left auricle, which projected to either side of the heart shadow on the anteroposterior view and sharply displaced the esophagus posteriorly and to the right. The right ventricle was also enlarged. An electrocardiogram showed rapid fibrillation with right axis deviation. The diagnosis was rheumatic heart disease with an enlarged heart, including left auricle enlargement (3+), right ventricle enlargement (2+), mitral insufficiency and stenosis, and auricular fibrillation, class 4-E.

In the hospital, with bed rest, daily mercurial diuretics, a salt-poor regimen, and digitoxin the patient rapidly became comfortable. She lost 28 lb. (12.7 kg.) of edema fluid, and the pulse rate was reduced to 82 per minute with no pulse deficit. Fibrillation continued. The murmurs were more audible. The patient was discharged on April 8, 1950, on a maintenance dose of 3 mg. of digitoxin orally per day, 2 cc. of a mercurial diuretic twice weekly, a salt-poor regimen (permitting approximately 2 gm. per day), and was advised to rest 12 hours daily. Sedation with 1.5 grain (0.1 gm.) of phenobarbital was used nightly.

Four weeks after discharge, on May 5, 1950, she complained of bleeding gums. Examination revealed several purpuric spots in the mouth and one near the anterior pillar of the fauces on the right that was actually bleeding. The skin showed numerous purpuric spots over the trunk and the extremities. A capillary fragility test (Rumple-Leede) was positive. The spleen was palpable 1 fingerbreadth below the costal margin and was soft. The bleeding time was over 1 hour, and the coagulation time was 4 minutes. The blood count showed 2,720,000 red blood cells, hemoglobin 6.5 gm., 6,200 white blood cells with a normal differential count and 42,000 platelets. The white cell series was normal. The bone marrow showed a normal number of megakaryocytes, but many were fragmented. There were a few islands of erythropoietic activity. The anemia was probably due to bone marrow depression as well as to hemorrhage.

The diagnosis was thrombopenic purpura secondary to drug therapy. All medicaments were stopped, and a total of 4,000 cc. of blood was transfused over a four-day period, when the platelets began to increase. The Rumple-Leede test was negative when the platelets reached a level of 104,000. The patient began to gain weight slowly and to show evidence of impending congestive failure, so cardiac therapy was again instituted on May 12, 1950, with every medication changed. To avoid repetition of the purpura the new agents were introduced one at a time, so that the offending drug or drugs might be discovered more quickly. Mercurial diuretics were started first. She needed injections every 48 hours to remain free of edema. The mercurial in the first instance was meralluride injection (mercuhydrin®). The second mercurial was mercaptomerin (thiomerin®) sodium. These were chosen because their formulas differ. No evidence of purpura was present either clinically or in the laboratory. One week later, the ventricular rate having increased to 128, with a pulse rate of 104, digitalis was again started. During the first admission the patient had received digitoxin (digitalene nativelle®) and on the second she received digoxin. Eventually she was maintained on 0.5 mg. of digoxin daily, with no recurrence of the purpura. She continued to need sedation, so pentobarbital, 3 grains (0.2 gm.), was prescribed each night instead of the phenobarbital she had received prior to the purpuric episode.

On this regimen she regained her health, at least to the state which had existed prior to the hemorrhagic complication. On Sept. 4, 1950, she asked permission to visit a daughter in a neighboring city. Since she was fully compensated, permission was granted for her to make this short trip. Arrangements were made for her to receive her mercurial diuretic (mercaptomerin sodium, 2 cc. every 48 hours), and prescriptions for digoxin and pentobarbital were taken along. She was to return in one week. Instead, she called and asked that her prescriptions be sent to

---

Director of Medicine, the Medical Service of the Richmond Memorial Hospital and the Berger Clinic.

[1] Burwell, W. B., and Hendrix, J. P.: Digitalis Poisoning, Am. J. Med. **8**: 640-657, 1950. Flaxman, N.: Digitoxin Poisoning: Report of 30 Cases, Am. J. M. Sc. **216**: 179-182, 1948. Fremont, R. E., and King, H.: Digitoxin Causing Ventricular Tachycardia with Peripheral Vascular Collapse: Report of an Unusual Case, J. A. M. A. **143**: 1052-1054 (July 22) 1950. Goldman, A. M.: Digitoxin or Digitalis Leaf; With Special Reference to the Toxicity of Digitoxin, New Orleans M. & Surg. J. **102**: 618-626 (June) 1950. Master, A. M.: Digitoxin Intoxication, J. A. M. A. **137**: 531-534 (June 5) 1949. Cushny, A. R.: The Action and Uses in Medicine of Digitalis and Its Allies, London, Longmans, Green & Co., 1925. Edens, E.: Die Digitalisbehandlung, ed. 3, Berlin, Urban & Schwarzenberg, 1948. Luten, D.: The Clinical Use of Digitalis, Springfield, Ill., Charles C Thomas, Publisher, 1936. Movitt, E. R.: Digitalis and Other Cardiotonic Drugs, ed. 2, New York, Oxford University Press, 1949, pp. 35-36. Robinson, G. C.: The Therapeutic Use of Digitalis, Baltimore, Williams & Wilkins, 1923. Weese, H.: Digitalis, Leipzig, Georg Thieme, 1936.

her, as she wished to stay longer. These were transmitted by telephone to a pharmacist.

Ten days later she returned to this community because her mouth was bleeding. Reexamination disclosed a recurrence of the previously purpuric state. On Sept. 28, 1950, the platelet count was 76,000, there were 3,240,000 red blood cells, and the hemoglobin level was 7 gm. per 100 cc. The white blood cell count was not significant. The bleeding time was again unobtainable (after one hour the finger was tightly bandaged to prevent further loss of blood). Coagulation time was 3½ minutes. The capillary fragility reaction was positive. The medication was investigated, and it was found on checking with the pharmacist that he had confused digitoxin with digoxin. (This again accentuates the dangers of telephone prescriptions.) She had been taking 0.5 mg. of digitoxin daily for seven days. There had been considerable anorexia for the past three days and some vomiting on the day bleeding was first noted.

Treatment was again instituted with transfusions: 3,500 cc. was given during one week, after which the red blood cell count reached 5,870,000, with 15 gm. of hemoglobin. The platelet count was 128,000. There were no further evidences of hemorrhage, and the bleeding, coagulation, and capillary fragility tests were normal.

During the past four months there has been no evidence of bleeding. The platelet count reached 236,000 on Jan. 17, 1951. However, evidence of chronic failure reappeared even with daily doses of the diuretic mercaptomerin sodium. This medication was changed to the meralluride injection used prior to the first attack of purpura, with no effect on the blood. This was done because a satisfactory diuresis failed to develop and the mercurial diuretics did not seem to be the offending cause of the purpura after our experience with the digitoxin. Subsequently, phenobarbital was given instead of pentobarbital, with no alteration in either platelets, bleeding or coagulation time, or the capillary fragility.

This history and clinical experience seemed to prove that the offending drug was digitoxin. While reviewing the literature to determine the occurrence of this complication of digitoxin therapy, the problem was discussed with Dr. Walter Modell, a pharmacologist at Cornell University Medical College, who felt that since this situation had never occurred before, the drug should be retested. This was done with considerable misgiving in view of the sudden severe seizures of purpura that have appeared after previous sensitization with allylisopropylacetylcarbamide (sedormid®).[2] Consequently, all other medication was maintained as before, and, on Jan. 9, 1951, 0.1 mg. of digitoxin was substituted for 0.1 mg. of digoxin in the daily 0.4 mg. maintenance dose, so that the patient then received 0.3 mg. of digoxin and 0.1 mg. of digitoxin. Daily counts were made to minimize the risk to the patient. The results shown in the table demonstrate the fall of the platelet count and the ultimate appearance of capillary fragility and anemia. On Jan. 14 the digitoxin was discontinued and replaced with mercaptomerin sodium, and 500 cc. of blood was given slowly. The blood findings returned toward normal in one week, as indicated in the table.

Blood Data During Retest of Digitoxin

Date	R. B. C.	Hb., Gm	Capillary Fragility	Bleeding Time, Min	Coagulation Time, Min	Platelets
1/9/51	4,720,000	15	Neg.	3½	3½	218,000
1/10/51	4,810,000	15	Neg.	3½	4	226,000
1/11/51	4,400,000	14.5	Neg.	4	3½	176,000
1/12/51	4,100,000	14.5	Neg.	4	3½	132,000
1/13/51	4,000,000	14	Neg.	4	3½	104,000
1/14/51	3,270,000	12	Pos.	3½	3½	78,000
1/21/51	4,300,000	14	Neg.	3½	3½	124,000

SUMMARY AND CONCLUSION

Thrombopenic purpura developed in a patient with rheumatic heart disease while she was receiving various cardiac drugs, including digitoxin, mecurial diuretics, and sedatives. Subsequent experience disclosed that digitoxin was the offending medicament when it was inadvertently given to her without changing any of the other drugs she was receiving. Later the administration of other drugs given prior to the development of the purpuric state failed to initiate any evidence of the blood dyscrasia. Finally, when small doses of digitoxin were given again, the daily blood cell counts showed a decrease in platelets on the sixth day. It is concluded that digitoxin is capable, albeit very rarely, of producing thrombopenic purpura.

7440 Amboy Rd., Tottenville.

2. Wintrobe, M. W.: Clinical Hematology, Philadelphia, Lea & Febiger, 1942, p. 501.

OSTEOMYELITIS OF THE CERVICAL VERTEBRAS AS A COMPLICATION OF URINARY TRACT DISEASE

PROTEUS BACTEREMIA TREATED WITH NEOMYCIN

Edwin J. Adlerman, M.D.
and
John Duff, M.D., New York

Osteomyelitis of the vertebras as a complication of urinary tract infection is a rare disease. Hurwitz and Albertson,[1] after reviewing the literature, reported nine cases in 1950, including one of their own. Three cases not included in the previous category were reported by Kusunoki [2] in which the humerus, femur, and tibia were involved. The spread of infection by the venous pathway from the prostatic and periprostatic veins to the vertebral veins is an excellent indirect means of transmitting infection to the vertebral bodies.

We wish to add a case to this series in which cervical osteomyelitis was the precursor of extensive pathologic processes. In so doing, results with the use of a new antibiotic, neomycin,[3] will be described.

REPORT OF A CASE

A 66-year-old white physician was admitted to the hospital on Feb. 10, 1949, with a 10-year history of urinary calculosis and symptomatology including repeated attacks of bilateral flank pain, dysuria, frequency, nocturia, straining, and hematuria. An intravenous urogram on Feb. 11 demonstrated bilateral nephrolithiasis, left hydronephrosis, and left ureteropelvic calculus. Endoscopy revealed a Grade 2 to 3 prostatic enlargement, with intravesical intrusion and numerous vesical calculi. Residual urine measured 200 cc., and the result of urine culture at this time was reported as "no growth of organisms."

While drainage was provided by an indwelling urethral catheter, urethritis developed; vesicolithotomy and suprapubic cys-

---

From the Department of Urology, Morrisania City Hospital.

1. Hurwitz, A., and Albertson, H. A.: Cervical Osteomyelitis and Urinary Tract Infection Caused by *Escherichia Coli*, New England J. Med. **243**: 562-563 (Oct. 12) 1950.

2. Kusunoki, T.: Über einen Fall von Pyocyaneus-Osteomyelitis der Wirbelsäule, im Anschluss an Pyelonephritis, Ztschr. f. Urol. **32**: 6 - 01. 1938.

3. Neomycin for use in this
Waksman, Chairman, Microbiol
Brunswick, N. J.

totomy were performed on Feb. 17. On the following day shaking chills and a temperature rise to 104 F. occurred, despite administration of penicillin and sulfadiazine. At this date both blood and urine cultures revealed Proteus vulgaris; the postoperative course was stormy, with severe bacteremic symptoms. Streptomycin was not efficacious, and the infection was finally controlled with large oral doses of aureomycin.

Severe cervical pain occurred early in March, 1949, and on March 23 roentgenographic examination of the cervical spine revealed extensive destruction of the fourth and fifth cervical vertebras, with moderate involvement of the intervertebral disk between these segments. Three weeks of cervicospinal extension followed by continuous wearing of a neck brace promoted recovery, and the patient was discharged, on cystotomy drainage, on April 27, 1949.

The patient was readmitted on June 20 complaining of chills and fever of one week's duration; microscopic examination of the urine showed 30 white blood cells per high-power field, and the urine culture was reported as P. vulgaris. Excretion urography demonstrated fair bilateral appearance of the dye, with a large left renal calculus at the ureteropelvic junction. Roentgenograms of the cervical spine revealed fair healing of the previous osteomyelitic process.

Despite aureomycin administration, the course became septic, and on June 29, 1949, left renal block occurred, with temperature elevation to 106 F. A left pyelolithotomy and nephrostomy were performed; a large calculus, measuring 3 by 3 by 2 cm. was removed from the pelvis and 30 cc. of thick pus was evacuated. Culture of the latter material again revealed P. vulgaris, and penicillin and streptomycin were administered.

The postoperative course was uneventful; the nephrostomy tube was removed on the 4th day, and the wound was well healed by the 10th day. He was discharged on July 11, 1949, still on cystotomy drainage, with urine cultures still positive for P. vulgaris. Maintenance therapy with methenamine mandelate (mandelamine®) was ordered.

The third admission, for second-stage suprapubic prostatectomy, was on Aug. 23, 1949. The prostate was Grade 2 in size (per rectum); prostatic smear revealed 20 white blood cells per high-power field, and the urine contained 20 white blood cells under similar magnification. The blood morphology was adequate, and the blood urea nitrogen level was 20 mg. per 100 cc. An intravenous urogram demonstrated appearance of the dye in good concentration bilaterally within five minutes, with relatively normal pelvic contour. In the right renal parenchyma was a pea-sized opacity. Urine culture was reported as streptococci overgrown by P. vulgaris.

On Aug. 26, suprapubic enucleation of the prostate was performed, and the prostatic fossa was packed with one roll of starch packing. Postoperatively, both penicillin, 300,000 units daily, and chloramphenicol (chloromycetin®), 2 gm. daily in divided doses, were administered. Despite these antibiotics, a chill and temperature rise to 104 F. occurred on the first day after surgery, and epididymitis developed on the left on the third postoperative day, Aug. 28. Sulfadiazine and streptomycin (1 gm. daily) were added to the therapy, but because of severe nausea on Sept. 1 all oral medications were discontinued, leaving control of infection dependent upon penicillin and streptomycin. The course remained septic, the cystotomy tube was reinserted after the removal of the packing on the 4th day, and epididymitis developed on the right on Sept. 5, the 11th day. Antibiotic therapy was continued, and the pathologic process in both epididymides appeared to be subsiding when, on Sept. 11, the 16th day, a shaking chill and temperature rise to 105 F. occurred. Bilateral orchiectomy suggested by us had been refused.

This episode marked the inception of a septicemia which persisted for a full month, resisted all medication, and was characterized by two to three shaking chills daily.

A Gram stain of the urinary sediment on Sept. 13 showed Gram-negative rods and Gram-positive cocci: on Sept. 17, 1949, blood culture was reported as Staphylococcus aureus, streptomycin was discontinued, and penicillin as previously administered plus aureomycin (250 mg. four times daily) was ordered. Cystoscopic examination on Sept. 20 failed to reveal any marked renal pathology, but P. vulgaris was cultured from the left renal urine.

In the period from Sept. 22 to 28 signs of bacteremia became apparent. Petechiae were noted on both lower extremities, conjunctivas, and mucous membranes. No cardiac murmurs were present, but endocarditis was definitely suspected. Blood urea nitrogen was 23 mg. per 100 cc., and suprapubic drainage was adequate. Blood cultures taken on Sept. 19 and 22 were reported as positive for a bacillus of the Escherichia coli group, either Aerobacter aerogenes or P. vulgaris. The organism did not give typical fermentation reactions, probably as a result of the previous therapy. During this time and up to Oct. 3, 1949, the following drugs had no effect:

1. Chloramphenicol, 6 gm. daily administered orally (Sept. 22 to 28);

2. Streptomycin, 2 gm. daily administered intramuscularly Sept. 23 to 28);

3. Aureomycin, 2 gm. daily administered intravenously i leucine (Sept. 30 to Oct. 3);

4. Sulfadiazine sodium, 5 gm. daily administered intravenously (Sept. 28 to Oct. 2);

5. Gantrisin,® (3,4-dimethyl-5-sulfanilamido-isoxazole), 6 gm daily administered orally (Oct. 2 to 7).

Sensitivity tests on organisms isolated from urine and bloo on Sept. 19, 22, and 23 indicated slight inhibition with aureomycin in dilutions containing 50 γ per cubic centimeter, whil there was no inhibition with streptomycin in all dilutions (50 γ per cubic centimeter through 0.05 γ per cubic centimeter With chloramphenicol there was slight to no growth in dilutions ranging from 125 γ per cubic centimeter to 0.45 γ. Sulfadiazine allowed growth in all dilutions, 50 through 0.09 γ pe cubic centimeter.

All attempts to isolate and note focus of infection were unsuccessful. Both epididymides then appeared normal to palpation; a chest roentgenogram on Oct. 2 was clear; no signs o cerebral abscess were present, and spinal fluid examinations revealed no pathologic elements. No costovertebral tenderness o evidence of perirenal or subphrenic abscesses were noted, an grossly the urine was clear. It was, however, our opinion that th patient probably had miliary abscesses of the liver, spleen, an kidneys, the latter despite no evidence of renal stress. Repeate sensitivity tests denoted increased resistance of the organism t all antibiotics and sulfonamides. Recourse to neomycin was the considered.

After conversations with Dr. Waksman, a specimen of cultured organism was forwarded to him. In tests in his laborator there was complete inhibition with neomycin. After this surve it was decided to try the drug.

Neomycin therapy was begun on Oct. 7, 1949, with a dosag of 300,000 units daily (2.5 cc. of solution intramuscularly ever four hours). The clinical results were striking. The chills whic had been occurring daily for nearly a month ceased; the patien felt much more comfortable, and his general condition improved, although he continued to have a febrile course wit temperatures between 100 and 102 F. during the first four da of therapy.

Blood and urine cultures were repeated daily and were reported as negative after the second day of administration of th drug. No toxic reactions to the drug were noted. Urinary outpu remained adequate, averaging 1,500 to 2,000 cc. daily, with a pH of 8, and blood urea nitrogen levels averaged 20 to 25 mg. pe 100 cc. A blood transfusion was administered every other da and the blood cell count as well as total serum proteins remained within normal limits. Unfortunately, no means of urinary or blood serum level determination of neomycin were available. On Oct. 10, ankle and sacral edema together wit right-sided cardiac failure developed. It was felt that a pancarditis had occurred, together with a slight pericardial effusion, and administration of digitalis was instituted. Edema abated and the pulse became regular by Oct. 13.

On Oct. 11 the neomycin dosage had been increased t 360,000 units daily. The patient's general condition appeared im proved and his appetite had returned, but his temperature co tinued to oscillate between 100 and 101 F. Sepsis appeared controlled, denoted by absence of chills and the negative blood and urine cultures, but apparently the focus of infection remained in the liver or spleen.

Use of the drug was continued, with no toxic manifestations noted; no deafness occurred. Marked weakness suddenly set in, and on Oct. 15, 1949, the patient died quietly in his sleep; no signs of either cerebrovascular accident or coronary occlusion were observed.

Autopsy revealed bilateral basal pulmonary atelectasis, pericardial effusion, right ventricular dilatation, atheromatous plaques of the left aortic cusp and aorta, and no evidence of fresh or old vegetations. The myocardium showed moderate fibrosis, and culture from the sclerotic plaques revealed Gram-positive cocci which were found on other organs post mortem and were considered probable contaminants.

Both kidneys had undergone changes incident to old pyelonephritis, but no infarction or evidence of bacterial thrombi were present grossly or microscopically. Both gross and microscopic changes incident to chronic cystitis were noted. Both testes were atrophic, and the epididymides on histologic examination contained submucosal inflammatory cell infiltration in the tubular linings.

The spleen was enlarged to three times normal size and weighed 600 gm.; it was adherent to the region of the diaphragm. Its entire superior portion was involved in a grapefruit-sized abscess that was well encapsulated and contained dark brown, viscous, purulent material which on culture grew out P. vulgaris identical with the organisms recovered from antemortem urine and blood specimens prior to neomycin therapy. No pathological condition was noted in the liver, pancreas, or adrenals, nor were there any thrombi present in the great vessels.

COMMENT

It is logical to assume that the cervical osteomyelitis was secondary to the urinary tract infection. The initial inhibition of the Proteus organism evidently was sufficient to permit bony restoration.

That the Proteus infection was not wholly eradicated is demonstrated by the patient's subsequent course and lack of response to other antibiotics and chemotherapy until neomycin was utilized. Generalized sepsis further complicated surgical procedure and indicated that removal of the prostate did not alter the process. It is a matter of conjecture as to exactly when the splenic abscess began to form; at its inception neomycin might have been more effective.

Although the blood stream and urine were sterilized, neomycin did not penetrate the encapsulated abscess, a factor which has been a *bête noir* of other antibiotic and chemotherapeutic agents. Further postulations cannot be made on the basis of one week of therapy.

104 E. 40 St. (Dr. Adlerman).

Reversible Heart Disease.—It is important to remember that a normal heart or one that is only slightly diseased may show symptoms that are solely the expression of some extracardiac disease, and that this extracardiac condition may manifest itself entirely or largely in the cardiovascular system. As a result, the cardiac symptoms may be so marked that they completely overshadow the underlying extracardiac disease. As a result the patient is often considered a cardiac invalid, whereas recognition of the effect of the extracardiac disease with treatment directed to the extracardiac condition usually brings about a reversibility in the cardiovascular symptoms. Failure on our part to recognize that many extracardiac diseases are expressed clinically through the cardiovascular system has led to unnecessary invalidism and even death. In every cardiac patient we must constantly be aware of the possibility that the heart itself may not be actually diseased, but that rather it is acting secondarily to other conditions in the body. It is only by recognizing these extracardiac factors before they produce structural changes in the heart muscle that the treatment of extracardiac disease may be instituted sufficiently early for the patient to be cured.—John F. Briggs, M.D., Reversible Forms of Heart Disease, *Diseases of the Chest,* November, 1951.

TREATMENT OF TENIASIS WITH QUINACRINE HYDROCHLORIDE

W. A. Sodeman, M.D.
and
Rodney C. Jung, M.D., New Orleans

In 1940 Culbertson[1] reported the successful action of quinacrine hydrochloride (atabrine® dihydrochloride) in the elimination of the tapeworm Hymenolepis fraterna from mice. He described the ready penetration of the wall of the small intestine by the drug, particularly in areas where the parasite is found. Later, in 1946, Saccomanno[2] reported the use of quinacrine in infestations with Taenia saginata. We have used quinacrine with success in the treatment of 11 patients with teniasis. Because reports of the effectiveness of quinacrine in such infestations are chiefly in the Latin American literature,[3] we are recording our experiences with this drug.

The general plan of treatment that we have followed is adapted from that described by Saccomanno and Rivero. On the day preceding treatment the patient received a milk diet with the expectation that roughage would be eliminated from the gastrointestinal tract, leaving the worm adequately exposed to the action of the drug. We have not established whether this procedure is essential. About 3 p. m. that day, a purge was given to some of the patients. This usually consisted of castor oil or magnesium sulfate. This not only eliminated roughage from the bowel but supplied a guide to the patient's requirements for active purgation. On the morning of treatment a cleansing saline enema was given. An hour after the enema, the patient was given 0.6 to 1.2 gm. of quinacrine hydrochloride, the dose being adjusted according to the age and size of the patient. Because of the nausea sometimes produced by the drug, 0.8 gm. was used as the upper limit, except in the first patient. Two of the 0.1 gm. tablets of quinacrine were given every five minutes with a little water until the entire dose had been taken. If the drug had previously produced nausea and vomiting in a particular patient, sodium bicarbonate was added to the water when the medication was repeated. Two to four hours after administration of the drug, the purge was repeated and the dose modified, if necessary, on the basis of the experience of the previous day. Food was withheld on the morning of treatment until after a bowel movement was obtained.

The above schedule is somewhat arbitrary in some respects, and we are not sure that all the conditions prescribed are essential. We were anxious, however, to test the efficacy of a reported program before we modified it. It is likely that the milk diet of the preceding day is not necessary, and it is likely that the patient may be able to take fluids immediately after the quinacrine has been

---

From the Department of Tropical Medicine and Public Health, School of Medicine, The Tulane University of Louisiana.

1. Culbertson, J. T.: The Elimination of the Tapeworm Hymenolepis Fraterna from Mice by the Administration of Atabrine, J. Pharmacol. & Exper. Therap. 70: 309, 1940.

2. Saccomanno, T. G.: Nuevo tratamiento de la teniasis, Prensa méd. argent. 33: 1657, 1946.

3. Saccomanno,[2] Nogueira Rivero, G.: La atabrina y la Taenia saginata, Horizontes méd. 4: 73, 1947. Hernandez Morales, F.: The Treatment of Taenia saginata with Atabrine, Puerto Rico J. Pub. Health 25: 78, 1949.

given. Purges other than castor oil or magnesium sulfate may be more desirable. These cathartics were used in order to duplicate the procedure recommended by previous authors. In two patients no purge was given following the quinacrine because the drug itself produced adequate purgation.

In all, the drug was administered to 11 patients with Taenia saginata infestation. One patient vomited the drug, and the full dose of 0.8 gm. was repeated after the vomiting. The full dose was repeated in this instance because the tablets from the first administration were recovered in the vomitus. In another patient, a white boy 10 years of age, the first administration of the drug was a failure. This was the only failure in the entire group. This patient vomited the drug soon after its administration. He was subject to severe constipation, and purgation was not successful. Some three months later, repetition of the quinacrine, with the addition of sodium bicarbonate, followed by large doses of three purgatives resulted in passage of the entire worm. The importance of post-treatment purgation is thus illustrated. In one patient the worm was fragmented on passage, but the head was recovered from the stool. In all patients the treatment was effective and the entire worm was obtained.

The frequent failure of aspidium oleoresin and the dangers attendant on its use have led us to discard entirely the use of this preparation in the treatment of teniasis. The prompt action of quinacrine and the benign character of the toxic reaction have established it in our opinion as the drug of choice. It is to be noted that the worms, when passed, had the color of quinacrine and were sluggishly motile.

SUMMARY

In a series of 11 patients with Taenia saginata infestation treated with quinacrine hydrochloride (atabrine® ydrochloride), the drug was effective in 10 on initial l and in the 11th patient when treatment was repeated. e only toxic reactions of importance were nausea and vomiting, which, in general, were easily controlled. Quinacrine appears to be the drug of choice in the treatment of Taenia saginata infestation.

1430 Tulane Ave. (Dr. Sodeman).

Corticotropin and Cortisone in Skin Diseases.—Corticotropin and cortisone are of considerable value in the treatment of several serious dermatoses, such as pemphigus, systemic lupus erythematosus, dermatomyositis and generalized exfoliative dermatitis. In these diseases ACTH and cortisone represent the best treatment available and may save the life of the patient. Treatment should be started as soon as possible.

In chronic inflammatory nonfatal dermatoses, ACTH and cortisone should be administered at present only to patients who are so ill that they are bedridden. The reason for this is the temporary nature of the beneficial effect produced by ACTH or cortisone. Once started, this treatment must be carried out for a long period of time. In patients who are not seriously ill the not infrequent occurrence of undesirable side-effects on prolonged treatment may result in a situation in which the treatment is worse than the disease.

Some diseases, especially atopic eczema, psoriasis and chronic discoid lupus erythematosus, have a tendency to rebound so forcefully that the disease may be worse on discontinuance of therapy than it had been before.—Walter F. Lever, M.D., ACTH and Cortisone in Diseases of the Skin, *The New England Journal of Medicine*, Sept. 6, 1951.

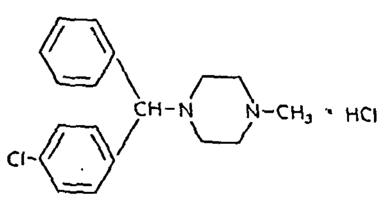
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as con forming to the rules of the Council on Pharmacy and Chemis of the American Medical Association for admission to New an Nonofficial Remedies. A copy of the rules on which the Counc bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Chlorcyclizine Hydrochloride.—Di-Paralene Hydrochloride (Al bott.)—$C_{18}H_{21}ClN_2.HCl$.—M.W. 337.29.—1-(*p*-Chlorobenzh dryl)-4-methylpiperazine hydrochloride.—The structural formu of chlorcyclizine hydrochloride may be represented as follow



Actions and Uses: (See general statement on Histamir Antagonizing Agents). Chlorcyclizine hydrochloride has pr longed action and low incidence of toxic effects. Symptoma benefit from this antihistamine is somewhat more erratic th from others of the group.

Dosage: Orally, 50 mg. two or three times daily.

Tests and Standards.—

Physical Properties: Chlorcyclizine hydrochloride is a white, odorle crystalline solid with a bitter taste. It melts between 222.0 and 227.0 One part of chlorcyclizine hydrochloride is soluble in 1.6 parts of water, 10.4 parts of alcohol, and in 3.6 parts of chloroform, and is practica insoluble in benzene and ether. The pH of a 1% solution is between and 5.5.

Identity Tests: Make 20 ml. of 1% chlorcyclizine hydrochloride alkal with sodium hydroxide T.S. and extract the liberated base with 25 ml. ether. Evaporate the ether on a steam bath. Dip a clean copper wire the oily residue and hold it in the nonluminous portion of the flame of Bunsen burner: the flame turns green *(presence of chlorine).*

Prepare 25 ml. of 1 per cent chlorcyclizine hydrochloride. To 5 ml. this solution add 2 ml. of nitric acid and 2 ml. of silver nitrate T.S.: white precipitate forms *(presence of halides).*

To 20 ml. of the 1 per cent solution add 20 ml. of 1% picric acid: fine, yellow, crystalline precipitate forms. Filter the mixture and recryst lize the precipitate from alcohol and dry it at 105 C for 4 hours: t picrate obtained melts between 215 and 219 C with decomposition.

A 0.001% solution prepared as described later in the assay for chl cyclizine hydrochloride exhibits an ultraviolet absorption maximum 2,300 Å [specific absorbancy, E(1%, 1 cm.), 443 ± 10] and a minim at 2,180 Å.

Purity Tests: Dry about 1 gm. of chlorcyclizine hydrochloride, acc rately weighed, for 3 hours at 120 C: the loss in weight is not more th 2.0%.

Ignite about 1 gm. of chlorcyclizine hydrochloride, accurately weighe the residue is not more than 0.20%.

Assay: (Chlorcyclizine Hydrochloride) Transfer 0.25 gm. of chlorcy zine hydrochloride, accurately weighed, to a 250 ml. volumetric flask a dilute to the mark with alcohol. Mix thoroughly and transfer 10 ml. the solution to a 100 ml. volumetric flask. Dilute to 100 ml. with alcoh mix well and transfer 10 ml. of the solution to another 100 ml. volume flask and dilute to 100 ml. with alcohol. The final solution (0.001 exhibits an ultraviolet absorption maximum at 2,300 Å [specific abso ancy, E(1%, 1 cm.), 443 ± 10].

Dosage Forms of Chlorcyclizine Hydrochloride

TABLETS. *Identity Tests:* Agitate enough of the crushed tablets to yie about 0.5 gm. of chlorcyclizine hydrochloride in 20 ml. of alcohol, cen fuge the mixture, pipette out 10 ml. of the clear supernatant liquid a add to it 20 ml. of 1% picric acid: a fine, yellow, crystalline precipit forms. Proceed as directed in the third identity test in the monogra for Chlorcyclizine Hydrochloride starting with, "Filter the mixture, rec tallize the precipitate from alcohol . . . ."

Assay: (Chlorcyclizine Hydrochloride) Weigh 20 tablets and grind the Accurately weigh the equivalent of 50 mg. of chlorcyclizine hydrochlor and transfer it to a 50 ml. volumetric flask. Add about 25 ml. of alco shake well to extract the chlorcyclizine hydrochloride and dilute to mark with alcohol. Mix thoroughly, centrifuge and transfer 5 ml. of clear supernatant liquid to another 50 ml. volumetric flask. Dilute to ml. with alcohol, mix well and transfer 5 ml. of the solution to a th 50 ml. volumetric flask and dilute to 50 ml. with alcohol. Measure optical density of the final solution (0.001%) in a 1 cm. quartz cell with a spectrophotometer at 2,300 Å [specific absorbancy, E(1%, 1 cm.), 443 ± 10]. The amount of chlorcyclizine hydrochloride present is not less than 95.0 nor more than 105.0% of the labeled amount.

Tablets Di-Paralene Hydrochloride: 25 mg. and 50 mg. Abbott Laboratories, North Chicago, Ill.

Cyclopentamine Hydrochloride (See The Journal, Sept. 8, 1951, page 128).

Solution Clopane Hydrochloride 1%: 30 cc. and 475 cc. bottles. An isotonic solution containing 10 mg. of cyclopentamine hydrochloride in each cubic centimeter. Preserved with phenylmercuric nitrate 1:50,000. Eli Lilly & Company, Indianapolis, Ind.

Aminophylline-U.S.P. (See New and Nonofficial Remedies 1951, p. 297).

Tablets Aminophylline: 0.1 gm. Mallard, Inc., Detroit.

Tablets Aminophylline: 0.2 gm. enteric coated. Meyer Chemical Company, Inc., Detroit.

Corticotropin (See The Journal, Sept. 22, 1951, page 325).

Solution Corticotropin: 5 cc. vials. A solution containing the equivalent of 40 provisional U.S.P. units of corticotropin in each cubic centimeter. Preserved with 0.5% phenol. The Wilson Laboratories, Chicago.

Dimethyl-Tubocurarine Iodide (See New and Nonofficial Remedies 1951, p. 162).

Solution Metubine Iodide: 50 cc. ampuls. An isotonic salt solution containing 1 mg. of dimethyl-tubocurarine iodide in each cubic centimeter. Preserved with 0.5% phenol. Eli Lilly & Company, Indianapolis.

Nicotinamide-U.S.P. (See New and Nonofficial Remedies 1951, p. 442).

Solution Nicotinamide: 10 cc. vials. A solution containing 0.1 gm. of nicotinamide in each cubic centimeter. Preserved with 0.5% chlorobutanol. B. F. Ascher & Company, Kansas City, Mo.

Sodium Morrhuate Injection-U.S.P. (See New and Nonofficial Remedies 1951, p. 169).

Solution Sodium Morrhuate 5% with Benzyl Alcohol 3%: 2 cc. ampuls and 20 cc. vials. An aqueous solution containing 50 mg. of sodium morrhuate and 30 mg. of benzyl alcohol in each cubic centimeter. Sherman Laboratories, Detroit.

Tubocurarine Chloride-U.S.P. (See New and Nonofficial Remedies 1951, p. 163).

Solution Tubocurarine Chloride (High Potency): 5 cc. ampuls. A solution containing 15 mg. of tubocurarine chloride in each cubic centimeter. Stabilized with 0.1% sodium metabisulfite. Abbott Laboratories, North Chicago, Ill.

Benzyl Benzoate-U.S.P. (See New and Nonofficial Remedies 1951, p. 77).

Lotion Vanzoate: 118 cc. and 3.78 liter bottles. A suspension containing 0.28 gm. of benzyl benzoate in each cubic centimeter. Preserved with 0.009% *n*-butyl *p*-hydroxybenzoate. U. S. Trademark, 415, 423. Vanpelt & Brown, Inc., Richmond, Va.

Undecylenic Acid-N.F. (See New and Nonofficial Remedies 1951, page 49).

Powdered Undesol: 90 gm. containers and 454 gm. jars. A fungistatic powder containing 20% zinc undecylenate and 2% undecylenic acid. Veltex Company, Birmingham, Ala.

Hexestrol (See New and Nonofficial Remedies 1951, p. 344).

Powder Hexestrol: Bulk; for manufacturing use. Chemo Puro Manufacturing Corporation, Long Island City, N. Y.

Dienestrol (See New and Nonofficial Remedies 1951, page 340).

Powder Dienestrol: Bulk; for manufacturing use. Chemo Puro Manufacturing Corporation, Long Island City, N. Y.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

The Council on Physical Medicine and Rehabilitation has authorized publication of the following report.

Ralph E. De Forest, M.D., *Secretary.*

HOLLYWOOD VITA-ROL NOT ACCEPTED

Manufacturer: Hollywood Vita-Rol, Division of S & D Engineering Company, 2540 North Naomi Street, Burbank, Calif. Mailing Address: P. O. Box 3277, Glendale 1, Calif.

In recent years a number of devices have been promoted for use in establishments for slenderizing, contouring, and spot-reducing. The Hollywood Vita-Rol is a device of this sort. Its over-all appearance is that of a large rolling-pin with an electric light cord entering at one end. This cord leads the current into a heating element that heats the device from within. The axial portion of this device is a piece of steel tubing with a hard rubber handle at each end. On it is mounted, by means of two ferrules, a second piece of steel tubing of greater diameter but shorter length than the first; this is covered with corrugated rubber and constitutes the roller.

An advertising booklet formerly used in promoting this device pictured a number of sylph-like models applying the heated roller to their hips, abdomens, and feet. The booklet claimed that the device was approved by "doctors and health columnists" and that it could be "extremely beneficial as a body conditioner." The booklet outlined a reduced-calorie diet said to provide "no starches," although it included oatmeal, graham crackers, and whole wheat toast.

The Hollywood Vita-Rol submitted by the manufacturer was tested in a clinic acceptable to the Council. In the opinion of the users, the temperature control was unsatisfactory and the device had no advantage over infrared radiation with manual massage. No evidence was obtained that this device would roll off fat.

In addition it has been reported that a judgment of condemnation was entered against the manufacturer in a federal seizure under the Federal Food, Drug and Cosmetic Act in the Southern District of California on Aug. 8, 1950, for the misbranding of a shipment of 60 of these devices. The charge was that "certain statements in the circular accompanying the device were false and misleading since the device was not effective for the purposes represented, and was not an effective treatment for the conditions represented. The manufacturer's statement represented and suggested that the device was effective for spot-reducing, rejuvenating, poor circulation, constipation, and insomnia, and that it was effective as a body conditioner and as a treatment for muscular soreness."

The Council on Physical Medicine and Rehabilitation voted not to include the Hollywood Vita-Rol in its list of accepted devices for lack of evidence that this device would make "fatty tissue slowly but surely disappear" and that it had any "ability to reduce only those areas which nature has allowed to get out of hand." When this matter was brought to the attention of the Hollywood Vita-Rol, Division of the S & D Engineering Company, the firm stated that the objectionable booklet had become obsolete. The question was then considered whether this device might be useful as a means of applying massage and warmth in physical therapy. As regards massage, the Council has long maintained that manual massage, because it is under constant, delicate control by the masseur, is generally safer and more effective than mechanical devices. As a means of applying heat to body surfaces, the limitations of the Vita-Rol were self-evident. Acceptance of this device would falsely imply some belief in its merits as a means for massaging and warming the body if not for shaping and reducing. For lack of evidence that the Hollywood Vita-Rol could be recommended for any of these purposes, the Council on Physical Medicine and Rehabilitation voted to reaffirm its original decision not to include this apparatus in its list of accepted devices.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

EFFICIENCY OF THE STETHOSCOPE

While technical improvements are constantly being made in newer diagnostic instruments, the traditional construction of the stethoscope is usually taken for granted. It has been shown, however, that a few simple changes in the specifications of the stethoscope will increase its efficiency significantly.

Some years ago Rappaport and Sprague [1] demonstrated that the acoustic efficiency of a stethoscope increases as the length of the tubing decreases, at least for sound waves with a frequency between 100 and 1,000 cps. For example, at 200 cps the intensity of the transmitted sound increases about 8 times as the tubing is shortened from a length of 26 in. (66.04 cm.) to a length of 3 in. (7.62 cm.). This increase in intensity occurs in the range where high pitched basal diastolic murmurs of low intensity are heard and where every possible increase in audibility is of great clinical value. Since a stethoscope with only 3 in. of tubing is difficult to handle, these authors feel that a compromise must be made in the interests of convenience. They recommend the shortest ube compatible with convenience in use and find that a length of 10 in. (25.40 cm.) satisfies these requirements.

More recently [2] the same authors have shown that for cardiac auscultation the efficiency of the stethoscope can be increased by decreasing the bore of the usual commercial rubber tubing. Objective acoustical measurements revealed that tubing with a bore of ⅛ in. (0.32 cm.) transmits appreciably more sound energy, in the range between 20 and 115 cps, than the conventional 3/16 in. (0.5 cm.) bore tubing. Sounds that usually fall within this range and would therefore be affected by such tubing changes are mitral diastolic murmurs, low pitched basal diastolic murmurs, the first, second, and third heart sounds, some systolic murmurs, and the auricular sound. In the range between 200 and about 750 cps, where medium and high pitched murmurs are heard, the difference in efficiency between the two tubes is small, although the ⅛ in. tubing seems to have a slight advantage. Above 750 cps, tubing with a ¼ in. bore becomes more efficient than either the ⅛ in. or the 3/16 in. tubing, but this part of the auditory spectrum has little importance in cardiac auscultation. Rales, however, do have some frequency components in this range. In addition to changes in tubing bore, changes in the bore of the metal binaurals of the stethoscope from 3/16 in. to ⅛ in. will further increase acoustic efficiency, according to these workers. This work serves as a reminder that periodic objective reevaluation of standard instruments and procedures often proves illuminating and profitable.

STREPTOCOCCIC ENZYMATIC DEBRIDEMENT

Some 20 years ago Tillett and his associates showed that hemolytic Streptococci produce a fibrin-lysing substance known as streptokinase. This product is abundantly excreted into the culture medium and is readily obtainable in bacteria-free filtrates. More recently these investigators demonstrated that the bacteria also secrete or excrete a second enzymic substance, streptodornase.[1] This substance acts on desoxyribose nucleoprotein, which was found by these investigators to be present in purulent and pleural exudates, and which, together with fibrin, accounts for the gelatinous coagulum and course sediment of such material. Thus the marked ability of partially purified streptococcic preparations to liquefy such exudates both in vitro and within the pleural cavity of patients with purulent and fibrinous pleurisy is of a dual nature, the purulent material containing two substrates, nucleoprotein and fibrin, and the Streptococci yielding two substances acting simultaneously in a specific catalytic manner.

Recently a number of reports have appeared concerning the clinical efficacy of a mixture of streptokinase and streptodornase in a variety of infectious processes. Thus Tillett and Sherry [2] treated 23 patients with exudative pleurisy associated with different types of disease by intrapleural injections of the enzymes. Fibrinolytic and proteolytic changes were demonstrable in samples of the exudates taken at repeated intervals after the injection. The effects were self-limiting after each injection. Intrapleural depolymerization of the nucleoprotein of the solid sediment of the exudate was also demonstrable in a similar manner. Toxic manifestations were limited to transient febrile reactions, with general malaise and a local outpouring of leukocytes.

The desirability of causing liquefaction of fibrin, o preventing its formation, or of resolving purulent nucleoprotein-containing sediments, the authors argue, would depend on a variety of conditions associated with the pathogenesis and expected evolution of the disease processes. Thus, they argue, if the solid increments constitut part of an advantageous walling-off process, then th liquefaction of the wall might promote a spread of th infection in its acute phases before the patients' immunit was sufficient to restrain the dissemination of the infection. On the other hand, the walling-off process may prevent the introduction of antibacterial reagents of an immunological nature, as well as antibiotic substances, int

---

1. Rappaport, M. B., and Sprague, H. B.: Physiologic and Physical Laws that Govern Auscultation, and Their Clinical Application; Acoustic Stethoscope and Electrical Amplifying Stethoscope and Stethograph, Am. Heart J. **21**: 257, 1941.

2. Rappaport, M. B., and Sprague, H. B.: The Effects of Tubing Bore on Stethoscope Efficiency, Am. Heart J. **42**: 605, 1951.

1. Tillett, W. S.; Sherry, S., and Christensen, L. R.: Streptococcal Desoxyribonuclease: Significance in Lysis of Purulent Exudates and Production by Strains of Hemolytic Streptococci, Proc. Soc. Exper. Biol. & Med. **68**: 184-188 (May) 1948.

2. Tillett, W. S., and Sherry, S.: Effect in Patients of Streptococcal Fibrinolysin (Streptokinase) and Streptococcal Desoxyribonuclease on Fibrinous, Purulent, and Sanguinous Pleural Exudations, J. Clin. Investigation **28**: 173-190 (Jan.) 1949.

the field of disease. Under these circumstances, elimination of the wall might be advantageous.

Tillett and his associates[3] treated a small group of patients with diseases characterized by undesirable presence of fibrinous or pleural exudates by local injection of the lysing enzymes. These included cases with loculated post-pneumonectomy hemothorax, traumatic hemothorax, sterile loculated empyema, bacterial empyema, miscellaneous chronic ulcerative lesions, and local infections, such as osteomyelitis and sinusitis. The method of treatment referred to as streptococcic enzymatic débridement was successful in this type of lesion. A marked thinning of the exudate, and outpouring of viable leukocytes, decrease in the number of or disappearance of the locally infecting bacteria, subsequent decrease or disappearance of exudate, and rapid regrowth of tissues and epithelium was noted. It was suggested that the effective clearing of the site of infection through enzymatic action renders the area permeable to humoral and cellular forces of both natural and specifically acquired immunity, or to circulating antibiotics that are capable of eliminating the organisms.

Miller and his co-workers[4] reported on the use of streptokinase and streptodornase in 85 patients with 80 excellent results and 5 poor results, the latter principally due to the fact that the blood supply to the areas treated in these cases was so poor that the streptokinase and streptodornase could not have acted. They have found these substances to be therapeutically active in serous, purulent or hemorrhagic exudates when the compounds could be brought into direct contact with fibrin or pus for a sufficiently long period. They feel that these enzymes offer the surgeon a new biologic approach to the therapy of infections and clotted hemothorax. Secondary closure of infected wounds and of cold abscesses can be carried out at an earlier period; infected denuded areas can be cleaned up preparatory to skin grafting, and accessible clots and fibrin coats can be liquefied promptly. The hydrolysis of fibrin in clotted hemothorax by the catalytic action of streptokinase provides an effective means of decortication.

Adie and Childress[5] report, in a recent communication, on the use of these enzymes in treatment of 23 patients. The cases in which the results were distinctly beneficial were those of hemothorax after thoracoplasty, infected hemothorax after thoracoplasty, infected abdominal wound after laparotomy, subcutaneous tuberculous sinus in chest wall incision, infected hemothorax after stab wound, empyema after lobectomy, and tuberculous pleural effusion. The effect was rapid and final in properly treated early hemothorax. In most purulent exudates the response was liquefaction of the thick pus, so that aspiration or drainage was improved. It was found essential that the enzymes be placed in intimate contact with the substrate and that a provision for adequate release of the increased fluid accumulation be instituted. Addition of antibiotics to the enzyme solution, they believe, will aid in reducing the infection in purulent processes and will prevent infection in sterile hemothorax.

DeBakey,[6] in his experience with 45 cases, found that the employment of streptokinase and streptodornase was particularly useful in the infected form of hemothorax, because loculations are likely to occur following such a complication. The enzymes produced here a striking dissolution of the loculated areas and permitted removal of the material collected in the pleural cavity by means of a catheter rather than by means of open thoracotomy.

As yet no serious toxic effects have been reported following the use of streptokinase and streptodornase and since these enzymes do not affect living tissue they do not interfere with the formation of healthy granulation tissues. This new therapeutic method appears thus to offer a new and promising approach to the control of suppurative infections and of hemothorax.

MYOCARDIAL INFARCTION VERSUS PULMONARY EMBOLISM

The differentiation between acute coronary thrombosis and acute pulmonary embolism is not always readily established clinically. A recent report by Levine and Vazifdar[1] emphasizes a unique medicolegal problem presented by two very similar cases in which death from acute pulmonary embolism was first erroneously attributed to coronary thrombosis. The first case was that of a 37-year-old workman who fractured his ankle at work. About two weeks after a cast was applied, upper abdominal pain developed, and the man collapsed and died within a week. Electrocardiographic findings shortly before death were consistent with the clinical impression of coronary thrombosis, and since the diagnosis was apparently obvious, no postmortem examination was performed. In the second case, a 45-year-old engineer suffered a painful, crushing injury to his foot and subsequently underwent two surgical procedures. He was confined to bed for some five months, after which he got around on crutches. Nine months after the injury, pain developed in the chest, and he died the following day. An electrocardiogram taken shortly before death was interpreted as confirming the diagnosis of acute coronary thrombosis with anterior myocardial infarction. In both cases, the question arose as to whether the widow was entitled to receive compensation for the death of her husband. Since it was questionable whether an accident could be established as the cause of a subsequent fatal coronary thrombosis, and since both histories seemed more typical of pulmonary embolism then of a coronary attack, at the authors' suggestion, the bodies were disinterred, two and one-half and five months respectively after death. In each case evidence of phlebitis and of pulmonary embolism was sought for and found, while in neither was there any evidence of myocardial infarction or coronary artery disease. Thus, the probable cause of death could reasonably be assumed to be pulmonary embolism, and compensation was awarded.

---

[3] Tillett, W. S., and others: Streptococcal Enzymatic Debridement, Ann. Surg. **131**: 12-22 (Jan.) 1950.

[4] Miller, J. M.; Ginsberg, M.; Lipin, R. J., and Long, P. H.: Clinical Experience with Streptokinase and Streptodornase, J. A. M. A. **145**: 620-624 (March 3) 1951.

[5] Adie, G. C., and Childress, W. G.: Experiences with Streptokinase and Streptodornase, Ann. Surg. **134**: 659-671 (Oct.) 1951.

[6] DeBakey, M. E., in discussion on Adie, G. C., and Childress, W. G.: Experiences with Streptokinase and Streptodornase, Ann. Surg. **134**: 659-671 (Oct.) 1951.

[1] Levine, S. A., and Vazifdar, J. P.: Confusion Between Acute Myocardial Infarction and Acute Pulmonary Embolism, Clarified at Autopsy Months After Death: An Important Medicolegal Problem, Am. J. M. Sc. **22**: 623, 1951.

ORGANIZATION SECTION

FEDERAL MEDICAL LEGISLATION

The Second Session of the 82nd Congress assembled for its first meeting on Jan. 8, 1952. All bills introduced during the first session are still alive, except those on which final action has already been taken. The following bills of importance to the medical profession were introduced on the first day of the Second Session.—Ed.

Emergency Maternity and Infant Care

Representative Bosone of Utah introduced H. R. 5871 proposing to provide for the national defense by enabling the states to make provision for maternity and infant care for wives and infants, and hospital care for dependents of enlisted members of the armed forces during the present emergency. This bill would establish a federal-state program on a fifty-fifty matching basis for paying the cost of maternity and infant care for dependents of military service personnel up to the grade of warrant officer. Established also on the same financial basis would be a program to cover the expenses of any hospital service for dependents. In both programs the states would be permitted "consistent with economy and efficiency . . . to . . . utilize the services of voluntary nonprofit agencies or organizations in the health or medical field. . . ." The bill is identical with Senator Lehman's S. 2237, introduced during the first session.

Veterans—Presumption of Service Connection

A bill proposing to liberalize the basis for establishing wartime service connection for active tuberculosis, the psychoses, and multiple sclerosis was introduced as H. R. 5892 by Representative Rankin of Mississippi. This bill would create a presumption of service connection if any of these three conditions developed within three years from date of discharge. At the present time, multiple sclerosis appearing within one year, psychoses appearing within two years, or tuberculosis appearing within three years from date of discharge developing a 10% or more disability, establish the basis for presumption of service connection.

Universal Military Training

Representative Van Zandt of Pennsylvania introduced H. R. 03, which would provide for the administration and discipline of the National Security Training Corps authorized by Public Law 51 of the first session of this Congress. The provisions of this bill are virtually the same as those of H. R. 5904, which was introduced by the chairman of the House Armed Services Committee, Representative Vinson of Georgia.

Representative Vinson's bill, H. R. 5904, will probably form the basis for a committee bill following public hearings that have been scheduled. Provisions in this bill of most concern to the medical profession follow. 1. Trainees during their six months training period in the corps will be furnished, among other things, with hospitalization, medical, surgical, and dental care. 2. Trainees who become disabled or die in the line of duty would not receive benefits from the Veterans Administration as do members of the military services; instead, after release from the corps cash benefits would be paid them or their beneficiaries under the Federal Employees Compensation Act, which is administered by the Department of Labor. The training agency would not be responsible for making any determinations, except as to whether the injury or death was training-connected. 3. The six months training period could be extended by the training agency with the consent of the trainee, or his next of kin if he is "incompetent," for the purpose of furnishing hospital, medical, surgical, or dental care. The trainee would be transferred to the jurisdiction of the Department of Labor for benefit determination at the earliest time consistent with the health and well-being of the trainee.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association.

CONTRIBUTORS TO THE AMERICAN MEDICAL EDUCATION FOUNDATION

Following are the names of all individuals and organizations who contributed to the American Medical Education Foundation between Oct. 1, 1951, and Dec. 31, 1951. In 1952 it is planned to publish a single list of contributors to the Foundation at the end of the year instead of the periodic listings that appeared during 1951.

Contributions received at the Foundation offices after Dec. 31, 1951, are being credited to the 1952 campaign.

PHYSICIANS

Alabama—1
Tom D. Spies

California—16
Bruce N. Balding
Sherman J. Beers
Herbert C. Behrens
F. E. Blaisdell, Jr.
Haynes C. Byrne
David Falk
L. Vincent Gorrilla
Berthel H. Henning
Samuel C. Kahlstrom
Clayton R. Johnson
D. H. Murray
R. Mel Perry
M. A. Schmutz
Avery E. Sturm
Stanley R. Truman
Stan J. Watson

Colorado—11
William C. Black
Harry C. Bryan
J. Laurence Campbell
Joseph D. Friedland
Garfield Hawlick
J. G. Hemming, Jr.
Louis U. Howlett
Robert C. Lewis
G. Paul Smith
Carl W. Swartz
Lester L. Ward

Connecticut—1
E. Myles Standish

Delaware—4
Eugene J. Szatkowski
B. Richard Vincent
C. E. Wagner
Victor D. Washburn

District of Columbia—1
Ervin N. Chapman

Florida—14
Russell B. Carson
Merritt R. Clements
Julius C. Davis
George H. Garmany
Walter J. Glenn
Taylor W. Griffin
Anne L. Hendricks
Walter B. Johnston
William King Peck
Francis D. Pierce
William C. Thomas, Sr.
Alvord L. Stone
William Dotson Wells
George Ashby Winstead

Georgia—4
Walter W. Daniel
W. L. Pomeroy
C. H. Richardson
Cleveland Thompson, Sr.

Hawaiian Islands—1
William P. Patterson

Idaho—1
Harold F. Holsinger

Illinois—11
Otho F. Ball
Miles J. Bielek
James P. Campbell
Don L. Fisher
Saul Halpern
Anne H. Hopwood
William F. Hutson
Edward H. Leveroos
Gordon L. Richards
Leslie O. Sale
Matthew M. Steiner

Indiana—4
Alfred H. Ellison
John J. Farris
Forrest R. LaFollette
Harry D. Schell

Iowa—7
Paul F. Chesnut
Arthur P. Echternacht
Edward F. Hagen
Arthur C. Richmond
Robert S. Shane
Clement A. Sones
John A. Thorson

Kansas—8
Harwin J. Brown
Laslo K. Chont
Marshall E. Christmann
Franklin D. Murphy
Laurence S. Nelson
Wirt A. Warren
Charles K. Wier
Jay K. Wisdom

Kentucky—2
Carl Pigman
Fred W. Rankin

Louisiana—2
Guy A. Caldwell
Harry S. Morris

Maryland—5
Joseph H. Bragdon
Jacob H. Conn
Cyrus H. Maxwell
Lee A. Rademaker
Harvey B. Stone

Massachusetts—7
Edward B. Benedict
Cyril E. Bonsfield
Earl M. Chapman
Albert A. Hornor
Richard E. Hunter
Stephen D. Peabody
Harold E. Perry

Michigan—11
William Bromme
Allen E. Brunson
Kent A. Dewey
Richard E. Dustin
Robert J. Frost
Gerrit J. Kemme
Edward D. Maire
Walter E. Pelczar
Gilbert B. Saltonstall
Robert H. Trimby
Victor M. Zerbi

Minnesota—13

Donald C. Balfour
Walter G. Benjamin
David T. Carr
Stanley S. Chunn
George A. Earl
Carle H. Holmstrom
Ludolf J. Hoyer
Douglas L. Jacobs
Frank H. Krusen
Robert A. Murray
Roy F. Pierson
Rosel T. Seashore
Walter H. Ude

Mississippi—2

Isaac C. Knox
R. A. Street

Missouri—5

Joseph Lederman
M. B. Perkins
Wendell G. Scott
Robert M. Smith
J. William Thompson

Montana—2

Thomas M. Keenan
Raymond F. Peterson

Nebraska—2

Robert B. Benthack
Joseph D. McCarthy

Nevada—1

Roland Stahr

New Jersey—13

David B. Allman
Raymond E. Banta
Sidney D. Becker
Henry Ameroy Hartwell
Theodore S. Heineken
Emanuel Klosk
Victor Knapp
Irving A. Meeker
Karl E. Morris
John L. Olpp
Dorothy M. Rogers
Joseph F. Sandella
Frederick J. Tooker

New York—57

Carl R. Ackerman
E. Henry Alicandri
Francis E. Barnhart
Emil C. Beyer
Ellis M. Black
Herbert H. Burger
George A. Burgin
Bernard J. Burke
Joseph W. Conrad
Edwin C. Coyne
Rufus B. Crain
Gilbert Dalldorf
Edward John Dolan
Walter F. Duggan
Samuel Federman
Abraham J. Fleischer
Edward P. Flood
Emanuel D. Friedman
Harold T. Golden
Maurice F. Goldfinger
Irving Greene
William Hinz
Morris Lowell Jampol
William A. Jarrett
Morris L. Jonas
Michael Josephson
Morris Leff
Walter Levy
Vladimir Markovich
Oscar Muller
Edwyn W. O'Dowd
John C. O'Hare
Anna W. Perkins
Theodore Perl
Moses L. Press
Abraham Raab
Leo S. Radwin
William A. Roberts
Fred V. Rockwell
Irving R. Sagerman
Henry M. Scheer
Nathan Schlossman
George Schwartz
Herbert F. Schwartz
Frederick R. Small
James W. Smith
Maxwell Spring
Marguerite P. Sykes
Abraham B. Tamis
Jacob Taub
James Tesler
Frank H. Valone
Harry Dan Vickers
Henry Vinicor
Frederick Weintraub
Sydney D. Weston
Joseph R. Wiseman

North Carolina—7

William M. Fowlkes, Jr.
Joseph M. Hester
Joseph R. Hester
Frank R. Lock
George W. Paschal, Jr.
O. Norris Smith
Charles R. Welfare

North Dakota—8

Kent E. Darrow
William E. G. Lancaster
Ernest J. Larson
Leonard W. Larson
James T. Marr
Clarence S. Martin
Richard D. Nierling
Joseph Sorkness

Ohio—94

Wilmer D. Abrams
Russell H. Barnes
Edward H. Beilstein
Philmour M. A. Bein
Clarence H. Bell
Wendell M. Bell
Fred P. Berlin
Paul A. Blackstone
Theodore L. Bliss
Lloy D. Bonar
Max Brown
Wallace H. Buker
Charles O. Butner
Rundle D. Campbell
Melvin M. Christian
John J. Clark
Edward Connor
Robert R. Crawford
James T. Cunningham
Charles F. Curtiss
Carl R. Damron
Donald W. Dewald
Edward D. Dowds
Joseph B. Edelstein
James A. Ellery
Mabel Emery
George L. Evans
D. B. Faust
Riley Frush
Max Garber
C. L. Hannum
Burr Hathaway
John Hattery
L. A. Hautzenroeder
F. J. Heringhaus
John V. Horst
Elmer Jackson
Charles Keller
J. H. King
Wilson Kingsboro
R. M. Kiskaddon
Harlin Knierim
C. K. Kuehne
Karl Langacher
D. C. Lavender
Paul J. Lee
Florence R. Lenahan
N. E. Lenahan
Raymond S. Lord
Ernest Mainzer
Lizabeth Mainzer
Earl Mast
Edward J. McCormick
Harold Mills
B. H. Moffatt
Robert Moffatt
Howard Oliver Musser
John Noll
Milton Oakes
Charles W. Pavey
Robert Peirce
Carl Quick
Myron Reed
E. A. Riemenschneider
Fowler B. Roberts
Robert Scott
George Searle
Joseph Seibert
Albert Selfman
Charles Shafer
Byers W. Shaw
Edward A. Shorten
B. E. Shreffler
Hazel P. Simms
William M. Skipp
Erling Smedal
Sigmund Smedal
L. A. Smith
P. O. Staker
John Stevens
Paul Stoodt
W. B. Turner
Albert Voegele
F. M. Wadsworth
Harry Wain
Jacob M. Werle
Kenneth Werts
C. F. Wharton (In honor of Cloyd Franklin Wharton)
Ralph Wharton
Hall Wiedemer
Ralph Wise
Louis A. Witzeman
Robert Wolford
W. E. Wygant

Oklahoma—9

Howard A. Bennett
Harold W. Buchner
Edward D. Greenberger
Lewis J. Moorman
R. G. Obermiller
Lucien M. Pascucci
Howard B. Shorbe
James Stevenson (In Memory of A. W. Adson, M.D.)
Hays R. Yandell

Oregon—3

Robert F. Day
Edward H. McLean
F. B. Packard

Pennsylvania—679

Enoch H. Adams
Albert Adlin
Norbert F. Alberstadt
Dill J. Albright, Jr.
F. C. Aldridge
I. Hope Alexander
John H. Alexander
Wesley C. Allison
R. E. Allyn
H. C. Amacher
J. Stanley Anderson
Kenneth E. Appel
Joseph Appleyard
W. J. Armstrong
Ernest J. Aten
William A. Atlee
Bruce R. Austin
John A. Ayres
Lawrence C. Bachmann
Martin J. Backenstoe
Harold A. Baeslack
J. C. Baier
Charles W. Bair
S. P. Balcerzak
William L. Ball
James V. H. Ballantyne
Grant W. Bamberger
T. W. Brackley
Robert P. Barden
William W. Barkley, Jr.
Lewis A. Barness
Everett S. Barr
George S. Barrett
William Bates
William Baurys
Helen M. Beck
Robert H. Beck
D. W. Beckley
E. Howard Bedrossian
Daniel H. Bee
C. B. Bell
D. M. Bell, Jr.
Joseph J. Bellas
John A. Bellis
Frank A. Belmont
Hilding A. Bengs
Raymond G. Benjamin
A. M. Benshoff
Charles B. Bertolet
John W. Best
E. M. Bevilacqua
Albert M. Biederman
Edward D. Bierer
Charles F. Bietsch
James A. Biggins
Mary Louise Black
C. Hugh Bloom
D. George Bloom
Joseph B. Bloom
Leon D. Blumberg
I. George Blumstein
Henry L. Bockus
Matthew J. Boland
John A. Bolich
J. Collier Bolton
Richard J. Bonacci
Peter L. Bonafede
John L. Bond
Frank R. Bondi
J. A. Borrison
William F. Boucher
Paul G. Bovard
George R. Boyd
George S. Boyer
J. L. Boyer
John M. Brecht
Henry G. Bregenser
William F. Brehm
Harry J. Bremer
Stewart F. Brewen
Elizabeth B. Bricker
Clarence C. Briscoe
William L. Brohm
C. J. Brower
Charles L. Brown
Claude P. Brown
Manson Brown
Tracy L. Bryant
Walter I. Buchert
Lewis T. Buckman
Samuel T. Buckman
Alfred J. Buka
W. H. Burgin
Edgar S. Buyers
Franklin S. Buzby
H. Samuel Callen
George J. Callenberger
James Milo Campbell, Jr.
Emilia M. Caprini
O. A. Capriotti
O. Sherman Carlson
Charles J. Carney
G. D. Castlebury
H. Bailey Chalfant
Maurice P. Charnock
H. Ford Clark
John K. Clark
Catharine M. Clarke
C. Perry Cleaver
Andrew B. Cloak
Harold M. Cohen
William S. Colgan
Paul C. Colonna
William F. Colvin
F. J. Conahan
Clifford Cooper
David L. Cooper
William B. Cooper
Arthur A. Cope
F. B. Couch
Frank A. Craig
D. L. Cribbs
Alfred W. Crozier
Glendon E. Curry
S. O. Curry
Theodora P. Dakin
H. T. Dale
D. Innes Dann
Horace F. Darlington

Leon C. Darrah
L. L. Darsie
Arthur B. Davenport
S. M. Davenport
David M. Davis
F. W. Davison
Roy Deck
Stephen J. Deichelmann
Raymond E. Deily
Edgar J. Deissler
O. A. Delle
David D. Detar
Horace E. DeWalt
Lovett Dewees
Joseph Z. Dickson
Robert G. Diess
John S. Donaldson
Walter F. Donaldson
George B. Dornblaser
Howard N. Douds
William T. Douglass, Jr.
Robert H. Dreher
John H. Dugger
Thelma L. Dulany
R. W. Dunlop
David D. Dunn
Frank P. Dwyer
Andrew P. D'Zmura
S. L. Earley
Joseph Edeiken
Joseph C. Edgar
O. J. Eichhorn
James F. Elder
David C. Elliott
William C. Ely
R. G. Emery
John F. Emmerling
Gilson C. Engel
James B. English
Harvey F. Enyeart
Henry W. Erving
Henry K. Erwin
William L. Estes, Jr.
Lewis E. Etter
Conrad A. Etzel
R. M. Evans, Jr.
Fred L. Ewing
Gerson Faden
Philip A. Faix
Thomas S. Fannin
Robert W. Farkas
John L. Farmer
J. G. Fear
Albert R. Feinberg
L. Kraeer Ferguson
Charles K. Fetterhoff
B. M. Field
Herman A. Fischer, Jr.
I. E. Fisher
Charles H. Fleck
James M. Flood
Clayton W. Fortune
Harold L. Foss
J. V. Foster
Tilman H. Foust
M. I. Francis
John A. Fraunfelder
Paul W. Frazer
J. W. Fredette
Howard G. Fretz
Paul S. Friedman
Robert W. Gage
Joseph H. Galia
Vincent D. Gallizzi
Harold B. Gardner
Richard W. Garlichs
H. F. Garman
George W. Gaumer
W. P. Gemmill
Eugene W. Gerth
F. Clay Gibson
William Blake Gibson
Roy W. Gifford
Basil J. Giletto
N. Troy Gillette
Joseph A. Gilmartin
Nathan N. Ginsburg
H. J. Glah, Jr.
John R. Glassburn
Donald E. Goehring
Milton Goldsmith
S. Byron Goldsmith
Norman G. Golomb
Alfred Gordon
Wendell B. Gordon
J. Elmer Gotwals
Raymond C. Grandon
Joseph E. Green, 2nd
Bradford Green
Daniel P. Greenlee
George W. Grier
Harold M. Griffith
W. E. Grill
D. Dwight Grove
William A. Guenon
Oren W. Gunnet
Donald Guthrie
William L. Guyton
Samuel J. Hagen
A. S. Haines
Raymond M. Hale, Jr.
Allen E. Hamburg
John G. Hand
George C. Hanna, Jr.
Samuel P. Harbison
Joseph E. Harenski
Parker J. Harley
C. M. Harris
J. H. Harris
Paul D. Harrison
Leroy D. Harshman
Thomas B. Hartford
John F. Hartman
Fred L. Hartmann
Donald H. Haselhuhn
George W. Hawk
George Hay
Harold S. Hay
Malcolm L. Hayward
Carl M. Hazen
Joseph L. Heatley
John A. Heberling
H. Vincent Heidenreich
N. H. Heiligman
George W. Heintzelman
Elwyn L. Heller
Robert L. Helm
Frederick G. Helwig
E. W. Henderson
C. P. Henry
Edgar S. Henry
Joseph A. Hepp
J. W. Hershberger
Charles S. Hertz
Joseph A. Hesch
C. Lester Hess
Elmer Hess
F. S. Hickey
John M. Higgins
Paul A. Hinchberger
C. L. Hinkel
William J. Hinkson
Drury Hinton
Edward Hoberman
Ralph E. Hockenberry
George L. Hoffman, Jr.
Wallace E. Hopkins
Henry F. Hottenstein
Rahn L. Hottenstein
Robert G. Howe
Charles C. Hubbard
Boland Hughes
G. E. Humphrey
A. D. Hunger
Henry F. Hunt
C. E. Imbrie
Chester L. Isenberg
S. Leon Israel
Robert H. Ivy
Francis Jacobs
Jerry M. James
Florence S. Jenney
Dorothy E. Johnson
Edith M. Johnson
John L. Johnson
S. Harris Johnson, III
John M. Johnston
Louis W. Jones
Henry D. Jordan
A. F. Kamens
Augustus S. Kech
J. Clarence Kelly
William F. Kelly
Edward E. Kemble
Edward M. Kent
Charles J. Kilduff
Robert A. Kimbrough, Jr.
Jacob Kincov
William C. Kinsey
H. C. Kinzer
Harold A. Kipp
Marvel S. Kirk
Norris J. Kirk
Charles J. Kistler
C. J. Kistler
John K. Kitzmiller
Theodore C. Klein
Dorothea B. Kleppinger
Paul O. Klingensmith
R. H. Knapp
John A. Kolmer
Robert R. Kooser
John J. Korn
Saul X. Kramer
John H. Krick
E. B. Krumbhaar
Charles L. Kuhn
Austin Lamont
Floyd M. Landis
Lowell L. Lane
W. D. Langley
John H. Lapsley
M. Q. Lavell
Carl B. Lechner
James J. Lee
George H. Ledger
Robert H. Leeper
C. A. Lehman
Mary E. Lehman
George Leibold
R. S. Leopold
William W. Lermann
W. Munro Leslie
Yale S. Lewine
Thomas J. Lewis
John S. Liggett
John P. Lim
William A. Limberger
Lawrence Limbert
Hesser C. C. Lindig
Jay G. Linn, Jr.
Max Littner
Ludwig Loeb
Robert L. Loeb
Roland A. Loeb
Albert E. J. Lohmann
Benjamin H. Long
Frank A. Lorenzo
Robert N. Lowrie
Harry Lubow
Edward Lyon, Jr.
Clifford H. Mack
Herbert P. MacNeal
Dorothy Macy, Jr.
Donald C. Malcolm
A. S. Mallek
J. G. Manley
Salomon Mann
Milton F. Manning
Valentine R. Manning, Jr.
Michael Margolies
Richard C. Marker
Francis B. Markunas
Clifford C. Marshall
James S. Martin
Albert A. Martucci
Emil T. Martyak
Gabriel S. Martyak
W. C. Masonheimer
Michael F. Matsko
Joseph C. Mattas
John F. Maurer
Karl F. Mayer
Andrew J. McAdams
John B. McAneny
John V. McAninch
C. R. McClure
John F. McCullough
David P. McCune
Marcus D. McDivitt
K. T. H. McFarland, Jr.
John S. McGavic
D. J. McHenry
William J. McHugh
F. W. McLaughlin
James T. McLaughlin
Howard C. McMillin
Robert P. Meader
Robert S. Mechling
Edgar W. Meiser
Edward C. Meisler
Edwin Mendelssohn
Milton Mermelstein
W. Clair Merriman
John L. Messmore
L. B. Miller
Malcolm W. Miller
Warren A. Miller
Joseph A. Mira, Sr.
H. Fred Moffitt
G. Herbert Moffses
Mark R. Montgomery
Charles C. Moore
S. W. Moorehead
Philip J. Morgan
Russell E. Morgan
C. J. Morosini
Sarah I. Morris
Forrest G. Moyer
Melchier M. Mszanowski
H. H. Muhlenberg
Carroll R. Mullen
F. E. Murdock
John A. Murray
J. M. Mustard
Carl H. Myerley
Charles E. Myers
Meyer Naide
Max S. Nast
John A. Nave
Harry B. Neal, Jr.
W. W. Nestor
Roy E. Nicodemus
Jacob P. Nill
Frederick W. Ninde
Holbert J. Nixon
Harold L. Noble
Robert F. Norris
Joseph F. Novak
Fred B. Nugent
John B. Nutt
P. David Nutter
Arthur J. O'Connor
J. J. O'Connor
Francis T. O'Donnell
Hugh A. O'Hare
Herbert Old
John G. Oliver
Harry B. Orringer
N. C. Ochsenhirt
Alexander H. O'Neal
Leslie H. Osmond
Joseph Palkovitz
Edward Pardoe
Thomas E. Park
David R. Patrick
Rudolph J. Patrizio
James P. Paul
Franklin L. Payne
Manuel M. Pearson
Edgar L. Pennell, Jr
H. Y. Pennell
Milton F. Percival
J. Ashbridge Perkins
Howard H. Permar
Harry M. Persing, Jr.
Morgan D. Person
Michael Peters
C. B. Peterson, Jr.
M. F. Pettler
George E. Pfahler
George M. Piersol
Ellsmer L. Piper
Hime S. Poliner
J. Lumen Popp
Asa W. Potts
E. R. Preininger
John A. Prickett
F. P. Purdum
James A. Pyne
C. Bernardin Quinn
Otto E. Ramik
John M. Ranck
Charles A. Rankin
James S. Rankin
H. R. Rarig

I. S. Ravdin
D. P. Ray
William B. Ray
Willis A. Redding
Charles L. Reed
Jack C. Reed
Marjorie E. Reed
Evan C. Reese
Leroy J. Reese
Carl F. Reichwein
E. Paul Reiff
Stanley P. Reimann
Charles R. Reiners
Kenneth G. Reinheimer, Jr.
E. Edward Reise, Jr.
Joseph H. Reno
J. E. Rhoads
M. Dwight Rhoads
Grace L. Riethmiller
Paul M. Rike
Emory A. Rittenhouse
A. Eaton Roberts
J. A. Robinson
A. T. Roos
Charles K. Rose, Jr.
B. Frank Rosenberry
Russell B. Roth
H. A. Rothrock, Sr.
Herman L. Rudolph
D. B. Rulon
Samuel A. Rulon, Jr.
John L. Rumsey
R. A. Rupp
Arthur L. Sagone
Thomas St. Clair
E. Roger Samuel
Harold H. Sankey
Victor P. Satinsky
Robert A. Schein
W. H. Schimpf
Samuel Schlesinger
William A. Schmidt
Truman G. Schnabel
M. H. Schneiman
W. D. Schrack, Jr.
Edward M. Schultz
Samuel K. Schultz
William J. Schwartz
Harvey H. Seiple
J. Stuart Seitz
Nevin H. Seitz
Floyd E. Shaffer
Lionel B. Shaffer
James B. Shaler
William Shapera
A. Paul Shaub
Katharine L. Shaw
Alice E. Sheppard
Lawrence A. Sheridan
Mathew H. Sherman
Samuel Sherman
J. S. Sherson
John J. Shields
Arthur H. Silvers
R. J. Simon
Allan Simpson
Jacob Slone
J. W. Smith
Perry C. Smith
W. C. F. Smith
Walter M. Smith
Thomas L. Smyth
W. J. K. Snyder
F. S. Sollenberger
S. D. Solomon
Benjamin F. Souders
William C. Spaeth
John R. Spannuth
James W. Speelman
Robert D. Spencer
William H. Spencer
Charles P. Stahr
Jack Steele
James M. Steele
Nathan Steinberg
W. North Sterrett
F. W. Stevens
Russell A. Stevens
Alexander Stewart
John W. Stinson
C. I. Stiteler
Thomas H. A. Stites
Joseph M. Stowell
Donald G. Stitt
I. T. Strittmatter, Jr.
C. J. Stybr
J. R. Sugerman
Nathan Sussman
Edward L. Sutton, Jr.
J. H. Swan
Francis X. Sweeney
John J. Sweeney
L. H. Sweterlitsch
Stanley S. Tanz
Ann Gray Taylor
David W. Thomas, Sr.
J. L. Thomas
C. W. Thompson
Wesley D. Thompson, Jr.
H. L. Tindall
H. Ernest Tompkins
Edward G. Torrance
Charles E. Towson
George J. Treires
Ethan L. Trexler
Mary M. Troll
Alfred E. Troncelliti
Frank Tropea, Jr.
George W. Truitt
Christopher M. Turman
Ralph M. Tyson
Harry B. Underwood
John C. Urbaitis
Frederick B. Utley
Robert S. VanDervort
Eugene N. VanDyke
Edward P. VanTine
C. Y. Veenis
Joseph L. Versage
Caroline Vetkoskey
Thomas J. Vischer
Harold R. Vogel
Jules T. Vogel
Frank N. Volk
Karl S. VonSenden, Jr.
Alexander S. Vujan
Franklin G. Wade
Irving M. Waggoner
John B. Wagner
Joseph A. Wagner
H. H. Walker
Ralph W. Walker
James E. Walmsley
Joseph M. Walsh
John H. Waring
W. Stuart Watson
Frank M. Weaver
Gordon D. Weaver
Henry P. Webb
H. R. Weddel
James R. Weddel
S. Dana Weeder
J. E. Weigel
Jack L. Weinstein
Albert E. Welsh, Jr.
Pauline K. Wenner
Clarkson Wentz
Walter E. Wentz, Jr.
William Wesner
William B. West
George F. Wheeling
James L. Whitehill
Cornelius Wholey
Hiram L. Wiest
Burton L. Williams
James E. Wilson
Harold L. Wilt
Louis H. Winkler, Jr.
John C. Winter
Walter Witherspoon
Charles R. Wolff
William A. Womer
Benjamin J. Wood
Francis C. Wood
Charles W. Woodcock
S. Lawrence Woodhouse, Jr.
John M. Wotring
L. E. Wurster
Robert H. Yockey
Yasohichi Yoshida
Ellis W. Young
Harold A. Zintel
Thomas C. Zulick, Jr.
Arnold H. Zwally

SOUTH CAROLINA—2
E. Walter Masters
William Weston, Jr.

TENNESSEE—3
J. K. Avery
W. B. Grenell
Leslie R. Lingeman

TEXAS—5
R. H. Chappell
Everett C. Fox
Chauncey D. Leake
P. M. Payne
Burt B. Smith

UTAH—1
Vernal H. Johnson

VERMONT—2
Alvin Bales
Barbara Beardslee

VIRGINIA—3
George S. Hurt
Russell Haden
James P. King

WASHINGTON—8
Allan B. Bell
T. H. Duerfeldt
Philip Grenley
John M. Havlina
Siegrfried Herrmann
Elvin E. Keeton, U. S. Navy
C. R. Mowery
R. L. Pulliam, Jr.

WEST VIRGINIA—2
Frank J. Holroyd
Walter E. Vest

WISCONSIN—5
E. G. Barnet
Gunnar Gundersen
William J. Houghton
Donald L. Knutson
R. H. Sanders

ORGANIZATIONS

Champaign County (Illinois) Medical Society
Memorial Hospital (Van Dyke; Mich.)
Modern Hospital Publishing Company Incorporated (Illinois)
National Physicians Committee (Illinois)
Norfolk County (Virginia) Medical Society
Rockingham County (New Hampshire) Medical Society
Rohlf Memorial Clinic (Iowa)
Westmoreland County (Pennsylvania) Medical Society
Wheatland General Hospital (Wyoming)
Wisconsin Radiological Society
Women's Auxiliary to the State Medical Society of Wisconsin
Woman's Auxiliary to the Medical Society of Delaware

LAY CONTRIBUTORS

Frank G. Dickinson, Chicago, Ill.
Harry E. Feather, Pittsburgh
Elizabeth M. Hinton, Drexel Hill, Pa.
R. W. Kobow, Fond Du Lac, Wis.
W. T. Kyadwell, Wauwatosa 13, Wis.
D. W. Lendl, Wingsdale, N. Y.
Frederick P. Maibauer, Wyandotte, Mich.
D. W. McCarn, Warrior, Ala.
Oliver F. Mershon, Philadelphia
Stephen E. Murray, Easton, Pa.
Morris J. Nicholson, West Newton, Mass.
R. L. Pattinson, Ontario, Canada
Joseph N. Roberts, Watseka, Ill.
Wilhelmina Scott, Lancaster, Pa.
Edward T. Shirley, Wynnewood, Okla.
Russell F. Staudacher, Chicago
Robert S. Stein, Nazareth, Pa.
William Swanberg, Chicago
Myer E. Werman, Brooklyn
Sidney Werman, Brooklyn
Henry S. Wieder, Jr., Philadelphia

TOTAL CONTRIBUTORS TO DATE

ALABAMA—16
ALASKA—0
ARIZONA—0
ARKANSAS—3
CALIFORNIA—54
COLORADO—98
CONNECTICUT—12
DELAWARE—5
DISTRICT OF COLUMBIA—2
FLORIDA—32
GEORGIA—9
HAWAII—3
IDAHO—1
ILLINOIS—65
INDIANA—18
IOWA—96
KANSAS—16
KENTUCKY—6
LOUISIANA—4
MAINE—3
MARYLAND—19
MASSACHUSETTS—33
MICHIGAN—27
MINNESOTA—32
MISSISSIPPI—3
MISSOURI—13
MONTANA—5
NEBRASKA—5
NEVADA—2
NEW HAMPSHIRE—0
NEW JERSEY—21
NEW MEXICO—10
NEW YORK—125
NORTH CAROLINA—12
NORTH DAKOTA—9
OHIO—151
OKLAHOMA—12
OREGON—11
PENNSYLVANIA—730
PUERTO RICO—1
RHODE ISLAND—0
SOUTH CAROLINA—11
SOUTH DAKOTA—4
TENNESSEE—5
TEXAS—21
UTAH—3
VERMONT—2
VIRGINIA—13
WASHINGTON—28
WEST VIRGINIA—11
WISCONSIN—14
WYOMING—1
ORGANIZATIONS—33
LAY CONTRIBUTORS—33

MEDICAL NEWS

CALIFORNIA

Symposium on Chest Diseases.—This symposium will be held February 21-22 at the Los Angeles County Medical Association Building, 1925 Wilshire Blvd., Los Angeles. Planned by the School of Medicine on the Los Angeles campus of the University of California and University Extension, in cooperation with the Los Angeles Trudeau Society, the Section of General Practice of the Los Angeles County Medical Association, and the Los Angeles County Tuberculosis and Health Association, the course is open only to graduates of medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association. As in the two previous symposiums, fundamentals as well as newer developments in the diagnosis and treatment of pulmonary diseases will be considered. The topics have been selected because of their practical value to physicians treating pulmonary diseases. Chairman for morning and afternoon sessions on February 21 are Drs. Kurt T. Shery, Torrance, and Reginald H. Smart, Los Angeles. Chairmen for the second day are Dr. Emil Bogen, Olive View, and Marvin S. Harris, Los Angeles. The fee for the course is $10 either by check or money order made payable at the time of enrollment to the Regents of the University of California. Requests for enrollment or applications for scholarships should be addressed to Dr. Thomas H. Sternberg, c/o Medical Extension, University of California, Los Angeles 24.

CONNECTICUT

Commission to Study Medical and Dental Training.—A commission of seven members to study means of expanding Connecticut's facilities for medical training has been appointed by Governor John Lodge. Dr. Creighton Barker, executive secretary, Connecticut State Medical Society, and Dr. Louis P. Hastings, Hartford, a member of the Connecticut Medical Examining Board, are members of the commission. The chairman is Henry Hicks, D.D.S., Greenwich; other members are Mrs. Arthur Iffland, Torrington, the Hon. Luke Stapleton, Chesshire, and Gordon W. Lamont, Darien. The commission will study the practicability of establishing schools of medicine and dentistry through the facilities of the University of Connecticut. The study will also concern additional facilities for the training of nurses d other medical and dental personnel, and it will explore the sibility of collaborating with other states in establishing ionally-financed schools for medical and dental training. The only medical school now in Connecticut is able to contribute only a small proportion of the number of new physicians required annually in the state. There is no dental school within the state. Other states continue to assume state control of the medical schools within their borders and to give preference on admission to their own citizens.

ILLINOIS

Summer Camp for Diabetic Children.—This camp will be opened for the fourth season under the auspices of the Chicago Diabetes Association, Inc., from July 1 to July 22 at Holiday Home, Lake Geneva, Wis. In addition to the regular personnel, a staff of dieticians and resident physicians trained in the care of diabetic children will be furnished by the association. Boys and girls, ages 8 to 14 years inclusive, will be accepted at a fee of $120, which covers the three week camping period and transportation from Chicago. Fee reductions may be arranged when considered necessary. Physicians are requested to notify parents of diabetic children and to supply the names of children who would like to attend camp. Inquiries should be addressed to The Service Unit, Chicago Diabetes Association, 110 S. Dearborn St., Chicago 3. Limited capacity requires prompt application. Children in Illinois and adjacent states may attend the camp.

Chicago

Personals.—Dr. Gerald D. Atlas has been named director of the medical services for the park district, succeeding the late Dr. Lourdes B. Gordon.——Edwin A. Ohler, M.S., instructor in physiology at the University of Illinois College of Medicine, has been promoted to assistant professor, and Dr. Harry M. Segenreich, clinical instructor in psychiatry, has been made a clinical assistant professor.——The title of Honorary Fellow was recently conferred on Dr. Max Thorek by the Philippine College of Surgeons.

Oppenheim Lecture.—Dr. Charles K. Friedberg, lecturer in medicine at Columbia University College of Physicians and Surgeons, New York, will deliver the third annual Maurice Oppenheim Memorial Lectureship sponsored by Alpha Rho Chapter of Phi Lambda Kappa fraternity at the Chicago Medical School. The lecture, "Recent Advances in the Physiology, Diagnosis and Treatment of Chronic Pulmonary Heart Disease," will be given at Kling Auditorium, Mount Sinai Hospital, February 6 at 4:00 p. m. All physicians in the Chicago area are cordially invited.

Annual Clinical Conference in Ophthalmology.—The Chicago Ophthalmological Society's fourth annual clinical conference will be held February 21-23 at the Drake Hotel. The first day will be devoted to surgical clinics at various Chicago hospitals. On following days symposiums on cataract surgery and recent advances in therapeutics will be followed by round table luncheons. There will be lectures concerning neuro-ophthalmology, ocular pharmacology, nystagmus, and provocative tests in glaucoma. Participants include Drs. Alson E. Braley of Iowa City; Justin M. Donegan, Joseph S. Haas, Peter C. Kronfeld, James E. Lebensohn, and Derrick Vail, Samuel J. Meyer, and Maurice D. Pearlman, Chicago; Irving H. Leopold, Philadelphia; John M. McLean and Joseph A. C. Wadsworth, New York, and C. Wilbur Rucker, Rochester, Minn. Information and dinner reservations may be obtained from Miss Maud Fairbairn, 8 W. Oak St., Chicago 10. The conference will be followed by a banquet and the eighth annual Sanford R. Gifford Memorial Lecture to be presented by Dr. Braley, head of the department of ophthalmology, the State University of Iowa, on "Experimental Studies of the Herpes Simplex Virus."

INDIANA

Professors Resign.—Two members of the Indiana University Medical School staff recently resigned to accept positions elsewhere. Dr. Versa V. Cole, associate professor of pharmacology since 1944, accepted an appointment to the department of pharmacology at the Army Medical Center, Bel Air, Md. Dr. Amos C. Michael, who has been associated with the school of medicine for the past 18 years and was associate professor of general pathology, resigned to accept an appointment as associate professor of pathology at the University of South Dakota School of Medical Sciences in Vermillion.

KENTUCKY

Annual County Medical Society Conference.—The second annual conference of county society officers will be held at the Brown Hotel, Louisville, February 7. In addition to all officers of the association and county medical societies, members of the council, chairmen of state committees and presidents, and secretaries and chairmen of the legislative and public relations committees of each county medical society have been invited. Dr. Louis H. Bauer, Hempstead, N. Y., President-Elect of the American Medical Association, will deliver the luncheon address. Other speakers are Dr. Carl F. Vohs, St. Louis, a pionee Blue Shield organizer; Dr. John T. T. Hundley, Lynchburg Va., president of the Medical Society of Virginia; Miss Charlotte Rickman, Raleigh, N. C., consultant on rural health of th Medical Society of the State of North Carolina, and Mr. J. E Stanford, Louisville, executive secretary, Kentucky Farm Bureau Federation.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

MASSACHUSETTS

New Cancer Hospital at Children's Center.—A five-story building, costing about $1,000,000 collected largely from motion picture patrons, was dedicated January 7 in the Fenway district in Boston. The building will house an outpatient tumor clinic and research laboratories. Facilities have been provided in the adjacent Children's Medical Center for patients requiring hospitalization. The new building will be known as the Jimmy Fund Building in honor of an unidentified child cancer victim whose name was used to spur the fund drive, which began three years ago. The National Cancer Institute awarded $100,000 to the project to pay for equipment.

MINNESOTA

Test Herds to Rid State of Brucellosis.—Eradication of brucellosis in cattle throughout Minnesota is the aim of a joint project launched November 26 by the Minnesota State Live Stock Sanitary Board and the United States Bureau of Animal Industry. Minnesota will soon face embargoes on its dairy products unless they come from brucellosis-free herds. Eradication of human brucellosis depends basically on wiping out the disease among animals. Three trailer laboratories will conduct the ring test for brucellosis every six to eight months in all counties. During the past three and one-half years the test has been used in only 34 counties.

MISSOURI

Wintersteiner-Elschnig Slide Collection.—This collection of some 15,000 slides has been completely cataloged during the past year by Dr. Milton R. Israel of the department of ophthalmology at St. Louis University School of Medicine. The collection, which has been a possession of the university for over thirty years, provides a picture of most types of eye diseases recognizable by specialists. Photomicrographs of the slides are to be made so that they may be sent to scientists throughout the country on request. St. Louis University acquired the collection from Dr. Wintersteiner's widow after Drs. Joseph M. Keller and William H. Luedde had seen the collection while they were studying in Vienna. Although some of the slides were made as long ago as 1890, each one is perfectly preserved with the original labels still intact. With the collection came a bibliography with a history of the diseases in the eyes which had been sectioned, together with a general description of the groups of diseases but no description of the individual slides. Dr. Edward V. L. Brown, professor of ophthalmology at the University of Illinois, Chicago, and this year's recipient of the Leslie Dana medal, recently explained some of the slides at his lecture December 8 on "Dr. Wintersteiner, His Teaching Methods and Procedures."

MONTANA

Society News.—The organization of the Montana Urological Association was completed recently. Dr. Thomas W. Saam, Butte, was named president of this new group, and Dr. Lawrence M. Arthur, Great Falls, was elected secretary-treasurer.

NEW HAMPSHIRE

Blood Collection Program.—The Red Cross Blood Bank Subcenter, which opened in Manchester in October, 1950, is operating so efficiently that the entire population of the state may receive blood when needed. The present program is designed primarily for local civilian needs, although there is still a military priority. The New Hampshire Medical Society's Blood Bank Committee is composed of Dr. Samuel M. Brooks, Manchester, chairman, and Drs. Robert D. Sall, Dover; John H. Meany, Keene; John B. Holyoke, Hanover; Lawrence R. Hazzard Jr., Nashua; Angus M. Brooks, Concord; Robert E. Biron, Manchester, and James T. Heyl, Exeter.

NEW YORK

Appointments in Pediatrics.—Dr. Charles Upton Lowe of the University of Minnesota, Minneapolis, has been named research pediatrician in charge of laboratories at Children's Hospital and associate professor of pediatrics in the University of Buffalo School of Medicine. Dr. Loren G. MacKinney, Johnson City, Tenn., is the newly appointed director of the outpatient department at the hospital and instructor in pediatrics at the medical school.

New York City

Further Lectures in Neoplastic Diseases.—The next five lectures and clinical conferences in a series being given by the division of neoplastic diseases at Montefiore Hospital for Chronic Diseases are as follows:

February 1, Experimental Chemotherapy in Treatment of Neoplastic Disease, Emanuel B. Schoenbach, Brooklyn.
February 15, Presentation of Cases, with discussion, Hospital Staff.
March 7, Carcinoma of the Pancreas, Charles B. Ripstein, Brooklyn.
March 21, Presentation of Cases, with discussion, Hospital Staff.
April 4, Management of Hodgkin's Disease, W. Edward Chamberlain, Philadelphia.

First Appointment to New Medical School.—Dr. Harry M. Zimmerman, chief, laboratory division, Montefiore Hospital for Chronic Diseases, has been appointed director of Yeshiva University Medical School. It is the first appointment made to the new school, which is to open in Brooklyn in the fall of 1953. Dr. Zimmerman, who will be in charge of academic organization and administration, is professor of pathology at Columbia University College of Physicians and Surgeons, and has been a consultant in neuropathology at the U. S. Naval Hospital at St. Albans, Queens.

Pilot Study in Morbidity Reporting.—Inauguration of a study to develop a method for continuous reporting of hospitalized cases of disease and injury was recently announced by the Russell Sage Foundation, which is financing the study, and Dr. Marcus D. Kogel, commissioner of hospitals. The study, a pilot project in morbidity reporting, is expected to result in the establishment of a permanent hospital morbidity reporting system in New York City. In contrast to progress made in reporting mortality data, morbidity statistics are still confined almost entirely to communicable diseases, the reporting of which is required by law. Under a permanent hospital morbidity reporting system all hospitals would regularly forward to a central agency reports on all discharged patients for processing, analysis, and evaluation. Need for a morbidity reporting system has been stressed for years by the board of health, the board of hospitals, the New York Academy of Medicine, the Hospital Council of Greater New York, and the Greater New York Hospital Association. As planned, the system in New York will actually present a picture of hospital patient populations on discharge, rather than during hospitalization. This is necessary because diagnoses are so frequently tentative in the early stages of hospitalization. The pilot project will cover all municipal hospitals and a limited number of voluntary hospitals for a period of six months. It is expected this will produce a sample of 160,000 discharge reports. Co-directors of the pilot study are Dr. Marta Fraenkel, director of the medical statistics and records service of the department of hospitals; and Mr. Carl L. Erhardt, director of the health department's Bureau of Records and Statistics. Dr. George Baehr will be chairman of an advisory committee for the project.

NORTH CAROLINA

Mobile Institutes for Care of Premature Infants.—The premature infant care training program recently begun at Duke University School of Nursing in Durham has been converted to a mobile institute. Two-day mobile institutes, under the direction of Eileen Kiernan, head of the program at Duke, will be open to public health and hospital nurses. Dean Florence K. Wilson of the Duke Nursing School said this arrangement makes the course available to many nurses in the state who otherwise would not be able to take advantage of this training. The course, sponsored by the North Carolina Pediatric Society and administered by the State Board of Health through pediatric consultant Dr. Robert J. Murphy, Chapel Hill, is designed to meet the special needs of premature infants and their parents in the hospital and in the home. The program, also sponsored in part by the North Carolina League of Nursing Education, is the only teaching program of its kind in the state, although there are several premature centers. The two-day institute will be in Charlotte January 29-30 before returning to Duke for the more intensive courses. Other mobile institutes in the spring, between courses at Duke, will be held in Asheville and Elizabeth City. The State Board of Health pays the nurses' room, board, and tuition while they are taking this training.

Watts Hospital Symposium.—The annual Watts Hospital medical and surgical symposium will be held at the Carolina Theater in Durham, February 13-14. The first morning will be devoted to a clinical pathological conference, the participants being Dr. Shields Warren, professor of pathology, and Dr. George Van S. Smith, Baker Professor and head of the department of gynecology, Harvard Medical School, Boston, and Dr. Hugh F. Hare, radiologist at the Lahey Clinic, Boston. Papers to be presented by visiting speakers include:

Albert Faulconer Jr., Rochester, Minn., Choice of Anesthetic Agents in Certain High Risk Patients.
Frank E. Adair, New York, Breast Cancer Complicating Pregnancy.
Shields Warren, Acute Radiation Syndrome and Its Therapy.
Edward C. Reifenstein Jr., Oklahoma City, Treatment of Osteoporosis with Steroid Hormones.
George Van S. Smith, Clinical Application of Endocrine Therapy in Menstrual Irregularities.
E. Perry McCullagh, Cleveland, Clinical Value of Testosterone.
Hugh F. Hare, Cancer of the Thyroid.

The evening program for February 13 will be a panel discussion on endocrinology with Dr. Edwin C. Hamblen of Durham serving as moderator. The speakers are as follows:

Edward C. Reifenstein Jr., Classification of Metabolic Bone Disease in Terms of Pathologic Physiology.
E. Perry McCullagh, The Male Climacteric.
Nathan A. Womack, Chapel Hill, Endocrine Factors Involved in Production of Benign Lesions of Breast.
Frank E. Adair, Use of Hormones in Cases of Advanced Breast Cancer.
George Van S. Smith, Progesterone Metabolites in Pregnancy.

PENNSYLVANIA

Statistical Research Study of Smoking.—The Pennsylvania Division of the American Cancer Society has approved a volunteer statistical research study in 34 counties to determine whether or not smoking is a contributing factor to lung cancer and if so to what degree. The study will be confined to Caucasian men between the ages of 50 and 69 years. Each volunteer researcher will be asked to obtain the smoking history of five or more men, after which the questionnaire will be forwarded to the Pennsylvania Division for compilation. Once a year thereafter each researcher will report on each person interviewed. In the event of deaths the county medical officers will study the death certificates and verify all deaths from lung cancer. Later the national society will analyze the data to determine if death rates from lung cancer are any greater in heavy smokers than in nonsmokers and light smokers.

Philadelphia

Alpha Omega Alpha Lecture.—The annual lectureship of the Alpha Omega Alpha Honor Medical Society, Jefferson Medical College Chapter, will be delivered by Dr. William Dameshek, professor of clinical medicine, Tufts College Medical School, Boston. Dr. Dameshek will speak on "An Introduction to Hemolytic Anemias" at 8:30 p. m. February 4 in McClellan Hall.

TEXAS

Grant for Research.—The Williams-Waterman Fund of the Research Corporation of New York has made a grant of $3,700 for the support of research in biochemistry, under the direction of John G. Bieri, Ph.D., associate professor of biochemistry and nutrition, at the University of Texas Medical Branch, Galveston.

Dr. Bessey to Head Department.—Otto A. Bessey, Ph.D., Chicago, has accepted appointment as professor of biochemistry and nutrition and chairman of the department at the University of Texas Medical Branch, Galveston. Prof. Bessey is serving in a similar position at the University of Illinois College of Medicine, Chicago. Formerly he was a research fellow in pathology and in biochemistry and nutrition at Harvard Medical School, Boston. He has been director of the division of physiology and nutrition of the Public Health Research Institute of the City of New York.

UTAH

Society News.—The South Central Utah Medical Society, meeting in Richfield early in December, was addressed by Dr. Carl Woolsey of Salt Lake City on "Inflammatory Conditions in the Pelvis and Endometriosis." Officers elected for the coming year included Dr. Dean Rigby, Moroni, president, and Dr. Richard H. Sears, Manti, secretary-treasurer.

WYOMING

Personal.—Dr. Charles Varga has been appointed pediatrician at the Schunk Clinic in Sheridan. Dr. Varga was formerly instructor in pediatrics at the New York University Post Graduate Medical School and assistant attending pediatrician at the University Hospital in New York City, both divisions of the New York University-Bellevue Medical Center. Dr. Varga is the only pediatrician in a wide area, as well as the first pediatrician in Sheridan.

Postgraduate Courses to Wyoming for General Practitioners.—The University of Colorado School of Medicine, Denver, is sending 12 members of its faculty to Cheyenne, Wyo., where they will conduct postgraduate lectures for family doctors February 20 through March 26. The lectures are co-sponsored by the university Office of Graduate and Postgraduate Medical Education and the Wyoming Chapter of the American Academy of General Practice, and they will be held every Wednesday from 7:30 p. m. to 9:30 p. m. in the Veterans Administration Center. The course is as follows:

February 20, Diagnosis and Management of Diabetes and Diabetic Coma, Robert W. Gordon; Frequent Errors in Gynecological Surgery E. Stewart Taylor.
February 27, Diagnosis of Common Chest Conditions, Robert S. Liggett Treatment of Fractures by General Practitioners, John T. Jacobs.
March 5, Management of Ulcerations of the Gastro-Intestinal Tract Frank B. McGlone; Initial and Follow-Up Treatment of Severe Burns Mordant E. Peck.
March 12, Recognition of Complicating Factors in Pregnancy, Freeman H. Longwell; Diagnosis of Common Neurological Conditions G. Milton Shy.
March 19, Treatment of Hernia, Inguinal, Umbilical and Post-Operative Edgar W. Barber; Fluid Balance in the Very Ill Patient, MacDonald Wood..
March 26, Surgical Treatment of Vascular Lesions of the Lower Extremities, Henry Swan II; Anesthesia, Use of Sodium Pentothal, Curare N_2O and O_2, Maintaining Blood Pressure at Normal Levels, Robert W Virtue.

The instructors, in addition to being faculty members, all are in active practice. The courses will be approved for 12 hours of credit by the Wyoming Chapter of General Practice.

GENERAL

Sharp Increase of Measles.—For the week ending January 12 a total of 16,331 cases of measles was reported, which was 75.9% higher than for the previous week and nearly 127.1% greater than the number reported for the same week of 1951 Substantial increases were reported in the New England, Middle Atlantic, East North Central, South Atlantic, and East South Central states.

U. S. Physicians to Serve on Argentine Journal Board.—The following physyicians from the United States have been appointed members of the editorial board of the journal *Neuropsiquiatria* published in Buenos Aires by the Argentine Ministry of Public Health: Walter L. Bruetsch, Indianapolis; Walter Freeman, Washington; Paul H. Hoch, New York; Matthew T. Moore, Philadelphia; Tracy J. Putnam, Beverly Hills, Calif. and Robert Wartenberg, San Francisco.

American College Regional Meeting.—A regional meeting sponsored by the American College of Physicians will convene in New Orleans on February 15-16. States to be represented include Louisiana, Texas, Tennessee, Arkansas, Mississippi, and Oklahoma. Morning sessions will consist of clinical presentations at Charity Hospital of Louisiana by staff members of the Tulane University of Louisiana School of Medicine, the Louisiana State University School of Medicine, and the Ochsner Clinic. Formal papers and a special panel discussion of new drugs will be afternoon features of the meeting. Guest of honor for the banquet on February 15 will be Mr. E. R. Loveland, Philadelphia, executive secretary, and Dr. Maurice C. Pincoffs of Baltimore, president of the college. All physicians are welcome to attend the meeting without registration fee.

New Assistant Director for PASB.—Dr. Paulo C. A. Antunes, assistant director, Pan American Sanitary Bureau, Regional Office of the World Health Organization, Washington, D. C., has resigned to become dean of the School of Hygiene and Public Health of the University of São Paulo, Brazil. To succeed him as assistant director of the bureau is Dr. M. G. Candau, formerly an assistant director-general of the World Health Organization in Geneva, Switzerland. Dr. Antunes joined the staff of the PASB in 1949. Since 1945 he has been professor of rural health practice and parasitology at the School of Hygiene and Public Health in São Paulo. Dr. Candau served for two years at WHO headquarters. Formerly he was superintendent of the "Servico Especial de Saude Publica," a cooperative public health program of the Brazilian Government and the Institute of Inter-American Affairs.

Regional Cancer Society Program.—Region II of the American Cancer Society will meet at the Greenbrier in White Sulphur Springs, W. Va., February 23-24. Representatives will be present from the divisions in Delaware, District of Columbia, Maryland, New Jersey, Ohio, Pennsylvania, Philadelphia, and West Virginia. The annual business meeting is scheduled for 4 p. m., and the annual dinner for 7 p. m. on Saturday. The following program will be presented on Sunday morning:

Raymond F. Kaiser, Washington, D. C., An Orientation to the Environmental Cancer Problem.
George H. Gehrman, Wilmington, Del., Experiences of the Dupont Company with Environmental Cancer.
Newman H. Dyer, Charleston, Cancer as Related to the Mining Industry in West Virginia.

The West Virginia Division will open the discussion on the subject "How Can the American Cancer Society Aid in the Handling of the Problem of Environmental Cancer in Our Division."

Mississippi Valley Essay Contest.—The Mississippi Valley Medical Society will offer for 1952 a cash prize of $200, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays win second and third prizes. Contestants must be members of the American Medical Association and residents and citizens of the United States. The winner will be invited to present his contribution before the annual meeting of the society in October, the society reserving the exclusive right to publish the essay first in its official publication, the *Mississippi Valley Medical Journal*. All contributions must be typewritten in English in manuscript form, be submitted in five copies, not exceed 5,000 words, and must be received not later than May 1. Further details may be secured from Harold Swanberg, M.D., secretary of the society at 209-224 W. C. U. Building, Quincy, Ill.

Fellowships at Woods Hole.—The Lalor Foundation is underwriting a series of annual awards for summer fellowships at the Marine Biological Laboratory, Woods Hole, Mass., for advanced research in the fields of physiological chemistry, biochemistry, and biophysics. Inquiries should be addressed to the director of the laboratory, Dr. Philip B. Armstrong, Syracuse University, Syracuse, N. Y., or to Homer P. Smith, General Manager, Marine Biological Laboratory, Woods Hole, Mass. The foundation will also provide predoctoral fellowships in the natural sciences, with emphasis on their biochemical and biophysical aspects, at the University of Delaware, Harvard, Johns Hopkins, and the University of Pennsylvania. Information regarding these fellowships should be addressed to a member of the selections committees at the respective universities. It is estimated that the funds available will permit the yearly appointment of six or more Lalor Research Fellows for summer work at the Marine Biological Laboratory and a yearly total of about 10 to 12 predoctoral fellows at the universities named.

Prize for Paper on Leukemia.—The Robert Roesler de Villiers Foundation, Inc., offers a prize of $1,000 to $1,500 for the paper making the most significant contribution to knowledge of the nature, causes, origin, treatment, or cure of acute leukemia and allied conditions. Should such a paper describe a cure or effective therapy, the jury of judges may suggest that the foundation increase its prize to a maximum of $5,000. Papers to be considered must have been either published or accepted for publication by a reputable journal in or outside of the United States between January 1, 1951, and October 20, 1952. Authors residing in countries outside the Western Hemisphere are requested to submit five copies of each paper to the Secretary-General P. D. Sven Moeschlin, M.D., Societe Internationale Europeenne d'Hematologie, Kantonsspital, Zurich, Switzerland. Authors residing in countries of the Western Hemisphere are requested to submit five copies of each paper to Secretary-General Sol Haberman, Ph.D., of the International Society of Hematology, 3301 Junius St., Dallas, Texas. Papers must be received not later than October 20, 1952.

Orthopedic Surgeons Meeting in Chicago.—The American Academy of Orthopaedic Surgeons will hold its annual meeting at the Palmer House January 26-31 under the presidency of Dr. Joseph S. Barr, Boston. The meeting will open Saturday with an audiovisual program that will continue through Sunday morning. A series of 16 instructional courses will be given Sunday afternoon. Single authors of papers being presented by invitation on the scientific program include:

P. K. Duraiswami, New Delhi, India, Experimental Causation of Congenital Skeletal Defects.
Robert Judet and Jean Judet, Paris, France, Results of Resection-Reconstruction of the Hip with Acrylic Prosthesis.
Herbert vH. Thatcher, Portland, Oregon, An Operative Procedure for Treatment of Dupuytren's Contracture.
Erik Severin, Goteborg, Sweden, Studies on Congenitally Dislocated Hips.
Gunnar Wiberg, Lund, Sweden, Shelf Operation for Dysplasia of the Acetabulum, Congenital Subluxation and Luxation of the Hip Joint.
Thomas D. Yocum, Newport, R. I., Subtrochanteric Osteotomy Correction of Slipped Upper Femoral Epiphysis.

Academy of Allergy Meeting.—The American Academy of Allergy will hold its annual meeting at the Hotel Sherman, Chicago, February 18-20 under the presidency of Dr. Horace S. Baldwin, New York. A series of postgraduate courses, beginning on the afternoon of February 15, will precede the scientific program. Invited speakers include:

Edward H. Leveroos, Chicago, Graduate Training and the Specialties.
Charles M. Pomerat, Ph.D., Galveston, Texas, Use of Tissue Cultures in the Study of Allergic Reactions.
Elvin A. Kabat, Ph.D., New York, Contributions of Immunochemistry to the Study of Allergic Reactions.

A panel discussion on ACTH and Cortisone and Their Use in the Allergic Diseases will be given Wednesday morning with Dr. William B. Sherman, New York, as moderator. The participants will be Drs. Carl E. Erbesman, Buffalo; Walter S. Burrage, Boston; Samuel M. Feinberg, Chicago; Leslie N. Gay, Baltimore; Jerome Glaser, Rochester, N. Y.; Stanley F. Hampton, St. Louis; Francis C. Lowell, Boston, and Ben Z. Rappaport, Chicago. Thirty papers are to be presented; 31 others will be read by title.

Common Cold Foundation Established.—This foundation has been formed as a nonprofit, free enterprise and has been incorporated under the laws of the State of Illinois to create and disburse funds "for use in developing research and investigation to the end that the common cold and its complications may be more adequately controlled, minimized, or eliminated from our national life." The foundation is endorsed by the Industrial Medical Association and the American College of Chest Physicians, which is providing office space at 112 E. Chestnut St., Chicago 11. Officers of the group include Dr. William A. Sawyer, medical consultant, Eastman Kodak Company, Rochester, N. Y., president; Dr. Frank R. Ferlaino, medical director, General Motors Corporation, New York, secretary; R. King O'Hara, vice-president of the First National Bank of Chicago, treasurer, and Dr. Charles M. Hendricks, Chicago, executive director. There is a board of directors of physicians and business men, a 16-member scientific advisory committee of university physicians in the United States and one from England, and an 18-member medical advisory committee of university physicians and eight medical directors of large industrial companies in the United States. Industry and business are being asked to contribute yearly sums to support this project to sustain a concerted and continuous research effort to solve the problem of the common cold.

LATIN AMERICA

Doctors' Portraits on Postage Stamps.—Peru has issued a 2-soles postage stamp carrying portraits of José Hipólito Unaune y Pavón (1755-1833), "father of Peruvian medicine," and José Cayetano Heredia y Garcia (1797-1861), physician who founded the faculty of medicine at Lima's University of San Marcos.

FOREIGN

WHO Appoints Adviser to Iran.—Dr. H. L. Larsen of Copenhagen, Denmark, World Health Organization appointee, has gone to Teheran to serve as a senior adviser of the Public Health Administration of Iran, in coordination of various international health programs being initiated there. In addition to his work in public health, Dr. Larsen is a specialist in tropical medicine with 26 years of experience in the Western Pacific. He was formerly chief medical officer of a mission sent by the League of Red Cross Societies to aid Palestine refugees.

German Society of Otorhinolaryngology Meeting.—The 23rd annual convention of this German society under the chairmanship of Prof. Frenzel of Gottingen will be held May 28-31 in Bad Reichenhall. The following subjects will be discussed:

Bronchology: Its Methods and Possibilities, Prof. Riecker, Wuppertal-Barmen.
Indications and Technique to Intrathoracic Surgical Interventions on the Bronchial System, Prof. Lezius, Hamburg.
Evaluation by the Otologist with Particular Consideration of Reduction in Working Capacity, Prof. Mittermaier, Marburg-Lahn, Prof. Bogs, Wilhelmshaven.

Yellow Fever Epidemic in Costa Rica.—The Air Rescue Service of the U. S. Air Force has been commended by the Costa Rican government for aid in halting a threatened yellow fever epidemic. A helicopter and six persons were assigned in order to reach Costa Ricans in the difficult north central interior. The ARS group made 42 landings over an area covering more than 6,000 square miles during a period of 11 days. Thirty-seven different villages, settlements, and farms were visited. The plane helped to congregate farmers for inoculation as well as to carry physicians and necessary medical supplies.

The ARS has 11 such rescue squadrons assigned to worldwide search and rescue duty under all conditions. The Costa Rican government has not reported any further human deaths from the disease since September 20. Thirty-one had died previously. It is reported that monkeys dead from yellow fever indicate a slow movement of the disease in a northerly direction in the interior.

cate Liberian Institute for Tropical Medicine.—Brigadier ral James S. Simmons, U. S. A. (retired), dean, Harvard ool of Public Health, Cambridge, Mass., was scheduled to ive an address in Liberia January 11 at the dedication of the Liberian Institute of the American Foundation for Tropical Medicine. Other speakers included Harvey S. Firestone Jr., President Tubman of Liberia, and Dr. Joseph N. Togba, director of public health and sanitation of Liberia. The institute is an outgrowth of an investigation of disease by the foundation and the Harvard School of Public Health and the Medical School. Mr. Firestone of The Firestone Tire & Rubber Co. created a $250,000 fund to establish the institute as a memorial to his father. The Republic of Liberia gave the land. The institute is designed for research in diseases of man and domestic animals and in agriculture in the tropics. Fifty major industries are contributing to its support, and its operations will be supervised by at least 10 leading university medical schools.

Dr. Mann to Direct Hadassah in Israel.—Dr. Kalman J. Mann of Jerusalem has just been appointed director-general of the Hadassah Medical Organization in Israel. The organization will inaugurate a new community health program, which will involve drastic revision in the training of Israel's physicians. The program was evolved after a long series of discussions between Dr. Mann and the medical advisory board of the Hebrew University and Hadassah. Dr. Mann succeeds Dr. Eli Davis, who is returning to his specialty of internal medicine in Hadassah's outpatient department.

Hadassah conducts a health and medical program in Israel, which includes operation of seven hospitals, joint operation of the Hebrew University Hadassah Medical School, 72 health welfare stations, a health center in Jerusalem, and a countrywide program of child hygiene. Hadassah is currently raising $5,500,000 for a new medical center in Jerusalem that will include a 430-bed-university teaching hospital and a nurses' training school. In addition, funds are being raised for new buildings for the medical school.

The curriculum of the Hebrew University-Hadassah Medical School will be so revised that the medical student will have to study community health problems before he is admitted to the diagnostic and curative phases of his training. The health centers, which up to now have been limited to prenatal and postnatal care, will become central bases for the establishment of the new program, which will be "keyed to community health needs rather than to the individual." Emphasis will be on maintenance of health rather than on diagnosis and cure of disease, involving such activities as control of sources of infection and means of its transfer in a community, immunization of its inhabitants, a comprehensive system of health education and other phases of public health.

Dr. Mann received his medical education in London and held many hospital posts there before returning to Israel in 1949 to pursue his specialty in pulmonary diseases. He has written extensively on tuberculosis and pneumoconiosis for British medical journals.

DEATHS IN OTHER COUNTRIES

Lord Christopher Addison, F.R.C.P., F.R.C.S., Radnage, West Wycombe, Bucks, chairman of the Medical Research Council since 1948, who devoted his early medical career to the teaching of anatomy at the University College in Sheffield and the latter half of his life to politics, serving as the first minister of health in Great Britain, died on December 11, aged 82. Lord Addison wrote papers and books on anatomical subjects and for some years was editor of the *Quarterly Medical Journal;* he was also editor of the twelfth edition of Ellis' "Demonstrations of Anatomy."——**Prof. Henry Raper,** dean of the medical school and professor of chemical physiology at Manchester (England) University, died December 13, aged 69, after a brief illness.——**Dr. Cesar Uribe Piedrahita,** Bogota, Colombia, who served on the medical faculty of the National University and was author of medical books, died in Bogota, December 17, aged 64, according to the *New York Times.*

CORRECTION

Postgraduate Courses.—In the list of postgraduate courses in THE JOURNAL, Dec. 8, 1951, page 1473, under the heading of Biochemistry, the course in Clinical Biochemistry should have been listed as given at Beth El Hospital, Brooklyn, and not at the Jewish Hospital.

On page 1477, the course in Internal Medicine given under the auspices of the Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn, should have been listed a being given at the Jewish Sanitarium and Hospital for Chroni Diseases.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 24-26, 1952. Sec., Dr. D. (Gill, 537 Dexter Ave., Montgomery 4.

ARKANSAS:* *Regular.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harr burg. *Eclectic.* Little Rock, June 5-6. Sec., Dr. Frank C. Smith, 23 Broadway, Little Rock.

CALIFORNIA: *Written.* Los Angeles, Feb. 18-21; San Francisco, June 23-2 Los Angeles, Aug. 18-21; Sacramento, Oct. 20-23. Application must received at least two weeks prior to date of examination. *Oral for Re procity Applicants.* Los Angeles, Feb. 16; San Francisco, June 21; L Angeles, Aug. 16; San Francisco, Nov. 8. Applicants are requested n to arrange to come to an oral examination until they receive notice fr the Credentials Committee. *Oral and Clinical for Foreign Medical Scho Graduates.* Los Angeles, Feb. 17; San Francisco, June 22; Los Angel Aug. 17; San Francisco, Nov. 9. Sec., Dr. Frederick N. Scatena, 1020 St., Sacramento.

Connecticut:* *Regular Examination.* Hartford, March 11-12. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic Examination.* Derby, March 11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Georgia: Atlanta and Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capital, Atlanta 3.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John K. Battenfield, Agana.

Indiana: Indianapolis, June 1952. Sec., Dr. Paul R. Tindall, 1138 K of P Bldg., Indianapolis 4.

Maine: Portland, March 11-12. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Michigan:* *Examination.* June. Sec., Dr. J. E. McIntyre, 100 W. Allegan St., Lansing 8.

Missouri: *Examination.* Jefferson City, Feb. 19-21. *Reciprocity.* Jefferson City, Feb. 11. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

Montana: Helena, April 1. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

Nevada:* Carson City, Feb. 4. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

New Hampshire: Concord, March 12-13. Sec., Dr. John S. Wheeler, State House, Concord.

New Jersey: *Examination.* Trenton, June 17-19. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico:* Santa Fe, April 7-8. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York City and Syracuse, Feb. 5-8. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany.

Oklahoma:* *Examination.* Oklahoma City, June 4-5. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: Philadelphia, Jan 22-25. Acting Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

Puerto Rico: *Examination.* San Juan, March 4. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

Vermont: Burlington, Jan. 31-Feb. 2. Sec., Dr. F. J. Lawliss, Richford.

Wyoming: Cheyenne, Feb. 4. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination.* On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Colorado: Denver, March 5-6. *Examination.* Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

Connecticut: New Haven, Feb. 8. *Examination.* Miss Mary G. Reynolds, Executive Assistant, State Board of Healing Arts, 110 Whitney Ave., New Haven 10.

District of Columbia: *Examination.* Washington, April 21-22. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington, D. C.

Florida: Gainesville, June 7. *Examination.* Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

Oklahoma: *Examination.* Oklahoma, April 14. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Rhode Island: Providence, Feb. 13. *Examination.* Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Texas: Austin, April. *Examination.* Sec., Bro. Raphael Wilson, 306 Nalle Bldg., Austin.

---

* Basic Science Certificate required.

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Forensic Sciences, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of General Practice, Cleveland, March 22-25. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, Secretary.

American Association of Anatomists, Providence, R. I., March 19-21. Dr. Normand L. Hoerr. 2109 Adelbert Road, Cleveland 6, Secretary.

American College of Radiology, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Laryngological, Rhinological and Otological Society:
Middle Section, Indianapolis Athletic Club, Indianapolis, Jan. 28. Dr. Ralph J. McQuiston, 20 North Meridian St., Indianapolis 4, Chairman.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Central Surgical Association, Toronto, Can., March 6-8. Dr. James T. Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St., Chicago 1, Secretary.

Michigan Clinical Institute, Book-Cadillac Hotel, Detroit, March 12-14. Dr. H. G. Cummings, 606 Townsend St., Lansing 15, Chairman.

National Conference on Medical Service, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., Secretary.

National Conference on Rural Health, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

New Orleans Graduate Medical Assembly, Municipal Auditorium, New Orleans, March 10-13. Dr. Woodard D. Beacham, 1430 Tulane Ave., Room 105, New Orleans 12, Secretary.

Sectional Meetings, American College of Surgeons:

Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.

Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.

Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

Southeastern Allergy Association, Augusta, Ga., March 21-22. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

Southeastern Surgical Congress, Atlanta, Ga., March 10-13. Dr. Benjamin J. Beasley, 701 Hurt Bldg., Atlanta 3, Ga., Secretary.

Southwest Allergy Forum, Hotel Baker, Dallas, Texas, March 2-4 Dr. James Holman, Medical Arts Bldg., Dallas, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

Congress of the International Diabetes Federation, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33. Prinsegracht, The Hague, Netherlands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, *Secretary-General.*

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

International College of Surgeons, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

International Congress of Haematology, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

International Congress of Internal Medicine, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

International Congress on Neuropathology, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

International Congress of Physical Medicine, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

International Union Against Tuberculosis, Rio de Janeiro, Brazil, Aug. 24-27. Prof. Etienne Bernard, 66 Blvd. St. Michel, Paris 6e, France, Secretary-General.

Latin American Congress of Physical Medicine, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

Pan-American Congress of Gastroenterology, Mexico City, D.F., May 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico City, D.F., Secretary.

Pan-European Congress of Gastroenterology, Bologna, Florence and Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Orsola, Bologna, Italy, Secretary.

DEATHS

Lancaster, Walter Brackett ⊕ Boston; born in Newton, Mass., May 11, 1863; Harvard Medical School, Boston, 1889; studied in Vienna, London, and Edinburgh; associate in ophthalmology at his alma mater from 1912 to 1923 and from 1935 to 1940; served as lecturer in ophthalmology on the staff of the Courses for Graduates at Harvard; from 1940 to 1942 professor of ophthalmology at Dartmouth Medical School in Hanover, N. H., where he was chief-of-staff at Dartmouth Eye Institute from 1940 to 1942 and ophthalmic surgeon of the Mary Hitchcock Memorial Hospital; long specialized in the field of physiological optics and was instrumental in founding at Dartmouth the department of research in physiological optics, from which the Dartmouth Eye Institute grew; in 1919 member of the House of Delegates of the American Medical Association and in 1927-1928 chairman of the Section of Ophthalmology, which in 1941 awarded him the Howe Research Medal; in 1935 president of the American Ophthalmological Society, which awarded him the International Ophthalmic Medal in 1944 and the Lucien Howe Medal in 1945; an executive of the Ophthalmological Study Council; chairman of the American Committee on Optics and Visual Physiology since 1930; three times president of the New England Ophthalmological Society, and in 1924 president of the American Academy of Ophthalmology and Otolaryngology; in 1943 received the Leslie Dana Gold Medal of the St. Louis Society for the Blind, awarded annually on recommendation of the Association for Research in Ophthalmology for outstanding achievements in the prevention of blindness and the conservation of vision; member of the council of the Association for Research in Ophthalmology; in 1923 member of the committee on scientific papers and in 1929 a delegate to the International Congress of Ophthalmology in Washington, D. C.; member of the American Orthoptic Council, the Optical Society of America and one of the editors of its journal, the National Research Council, American Association for the Advancement of Science, and the Illuminating Engineering Society and its committee on research; fellow of the American College of Surgeons; in 1942 delivered the fifth De Schweinitz lecture of the College of Physicians of Philadelphia; one of the original members and several times president of the American Board of Ophthalmology d member of the executive committee of the Advisory Board edical Specialties; chairman of the ophthalmology section the National Conference on Nomenclature of Disease; gave e name "aniseikonia" to the disease of unequal vision, for which the Dartmouth Eye Institute had discovered methods of diagnosis and treatment; during World War I was a major in the Medical Corps of the U. S. Army Air Force and served as head of the department of ophthalmology in the aeronautical research laboratories at Mitchel Field, N. Y.; an official of the Foundation for Vision, Inc.; for many years ophthalmic surgeon at the Boston City Hospital, Massachusetts General Hospital, and the Massachusetts Eye and Ear Infirmary and continued his work in a consulting capacity; consulting ophthalmic surgeon at the New England Hospital for Women and Children; instrumental in founding the Boston Nursery for Blind Babies and was its first consultant; in May, 1943, the *American Journal of Ophthalmology* was designated the Lancaster Testimonial Issue to commemorate his 80th birthday; received the honorary degree of doctor of science from Dartmouth in 1939; published numerous papers in the field of physiological optics; died December 9, aged 88, of heart disease.

Maguire, Daniel Laurence ⊕ Charleston, S. C.; born Nov. 15, 1882; Medical College of the State of South Carolina, Charleston, 1907; joined the teaching staff of his alma mater in 1914 and served as professor in the department of surgery until his resignation; clinical professor of surgery emeritus at the medical college; vice-chairman of the board of trustees of the College of Charleston and physician to that college; past president of the county board of health; formerly member of the state board of medical examiners; member of the Southeastern Surgical Co gress; fellow of the American College of Surgeons; chairma of the executive staff of St. Francis Xavier Infirmary and a vis iting surgeon to Roper Hospital; died October 6, aged 68, o hypertensive cardiovascular disease.

Milburn, Conn Lewis ⊕ San Antonio, Texas; born in Unio ville, Mo., Sept. 20, 1876; University of Texas School of Med cine, Galveston, 1905; also a graduate in pharmacy; at one ti on the faculty of his alma mater; past president and vice-pres dent of the Bexar County Medical Society; fellow of the Ame can College of Surgeons; chairman of the city board of heal and member of the county board of health; member of th Council on Medical Education and Hospitals of the State Med cal Association of Texas; affiliated with the Robert B. Gree Memorial, Baptist Memorial, and Santa Rosa hospitals; medic director and owner of the Central Clinic Hospital, where h died recently, aged 74, of coronary thrombosis.

Yates, Earl Carroll, Lexington, Ky.; born in Wheeling, W. Va April 11, 1898; University of Michigan Medical School, An Arbor, 1922; member of the American Medical Associatio specialist certified by the American Board of Otolaryngolo past president of the Fayette County Medical Society; memb of the county board of education; affiliated with Good Samarita Hospital, where he was past president of the staff, Shriners Ho pital for Crippled Children, U. S. Public Health Service Ho pital, and St. Joseph Hospital; served as a member of the boa of directors of the Kentucky State Medical Mutual Insuran Company; died September 2, aged 53, of carcinoma of th pancreas.

Blake, Herbert Claude ⊕ Baltimore; born in 1882; Baltimo Medical College, 1905; fellow of the American College of Su geons; in 1909 was appointed assistant surgeon of the Fourt Infantry National Guard and later served with it in the Mexica border campaign; served overseas during World War I; durin World War II joined the Maryland State Guard and was ap pointed chief surgeon with the rank of colonel; formerly sta commander of the American Legion and the Veterans of Forei Wars; affiliated with Maryland General Hospital, where he di November 20, aged 69, of coronary thrombosis.

Agnew, William, Cleveland; Ohio Medical University, Colum bus, 1900; died November 18, aged 81.

Alden, Albertus Holmes ⊕ North Lima, Ohio; University Wooster Medical Department, Cleveland, 1903; formerly mem ber of the North Lima Board of Education; died November aged 83, of carcinoma of the prostate with metastases.

Alexander, Isador Henry, New York; University of the Ci of New York Medical Department, New York, 1892; special certified by the American Board of Otolaryngology; for ma years on the faculty of the New York Post-Graduate Medic School and Hospital; affiliated with Harlem Eye and Ear Ho pital; on the staff of Lenox Hill Hospital, where he died N vember 23, aged 79, of heart disease and complications follo ing a fall.

Arends, Katharine Wanda, New York; New York Medical Co lege and Hospital for Women, Homeopathic, New York, 190 died in Presbyterian Hospital November 21, aged 90.

Armstrong, Thomas Blake, Atlanta; Atlanta College of Phys cians and Surgeons, 1913; member of the American Medi Association; affiliated with the Veterans Administration, Grady Memorial Hospital, Georgia Baptist Hospital, and Crawford W. Long Memorial Hospital; served during World War I; died in St. Simons Island December 2, aged 67, of ruptured aorta.

Axley, Harold ⊕ Cottage Grove, Ore.; Rush Medical College, Chicago, 1922; served during World War I; died in Sacred Heart Hospital, Eugene, November 16, aged 58, of myocardial infarction.

⊕ Indicates Fellow of the American Medical Association.

Baker, Luther P., Atlanta; Hospital Medical College, Eclectic, Atlanta, 1909; member of the American Medical Association; died November 13, aged 69, of peritonitis, diverticulitis, and coronary disease.

Banks, Harry Barnet ⊕ San Francisco; University of California Medical School, San Francisco, 1935; served during World War II; on the staffs of Mount Zion, French and Doctors hospitals; died October 29, aged 54, of carcinoma.

Beall, Charles Middleton ⊕ Washington, D. C.; Columbian University Medical Department, Washington, 1900; for many years on the staff of Garfield Memorial Hospital; associate medical director of Acacia Mutual Life Insurance Company; died November 20, aed 74, of lymphatic leukemia.

Beckett, George M., Washington, D. C.; National University Medical Department, Washington, 1889; also a dentist; retired medical examiner for the United States Pension Service; died December 1, aged 88, of myocarditis.

Benninghoff, George Edward, Lakewood, N. Y.; University of Wooster Medical Department, Cleveland, 1879; member of the American Medical Association and the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; served on the staff of Bradford Hospital in Bradford, Pa., where he died November 14, aged 97.

Bigham, John Christostem, Batesville, Ind.; University of Louisville (Ky.) Medical Department, 1920; city health officer; on the staff of the Margaret Mary Hospital; died November 24, aged 58, of coronary occlusion, hypertension, and arteriosclerosis.

Bower, Raymond E. ⊕ Chillicothe, Ohio; Rush Medical College, Chicago, 1901; county health commissioner; died November 10, aged 84.

Bowles, George William ⊕ York, Pa.; Howard University College of Medicine, Washington, D. C., 1906; past president of the National Medical Association; died October 7, aged 72, of carcinoma of the stomach.

Boynton, Vincent Russell, Denver; Rush Medical College, Chicago, 1906; chief resident physician at Denver General Hospital, where he died November 9, aged 72.

Brickett, Beatrice Hannah ⊕ Newton, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1898; retired superintendent of the Massachusetts Women's Hospital in Boston; served on the courtesy staff of the Quincy City (Mass.) Hospital; died December 10, aged 88, of cholecystitis.

Bromberg, Charles Bernard ⊕ Passaic, N. J.; Jenner Medical College, Chicago, 1915; died recently, aged 61, of coronary thrombosis.

Buck, Elmer Robert, Sioux Falls, S. D.; Keokuk (Iowa) Medical College, 1898; died in Sioux Valley Hospital October 19, aged 81, of pulmonary embolism.

Ciervo, Salvatore ⊕ Brooklyn; University and Bellevue Hospital Medical College, New York, 1921; died October 13, aged 52, of heart disease.

Dankberg, Julius ⊕ New York; George Washington University School of Medicine, Washington, D. C., 1929; served during World War II; died recently, aged 50, of a heart attack.

Di Stasio, Frank ⊕ New Haven, Conn.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1933; specialist certified by the American Board of Radiology; member of the American College of Radiology; chief of the department of roentgenology at the Hospital of St. Raphael; died in New Haven Hospital October 20, aged 45.

Dolman, Percival, San Francisco; Cooper Medical College, San Francisco, 1905; member and past president of the state board of medical examiners; member of the American Medical Association; died recently, aged 76, of a heart attack.

Giessler, Paul William, Minneapolis; University of Minnesota Medical School, Minneapolis, 1913; clinical assistant professor of surgery at his alma mater; member of the American Medical Association, Clinical Orthopaedic Society, and the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served on the staff of Abbott Hospital; died recently, aged 66.

Holcomb, John Levi, Vian, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; died October 9, aged 75, of coronary thrombosis.

Holcombe, George Molton, Okeene, Okla.; Washington University School of Medicine, St. Louis, 1916; served during World War I; died recently, aged 66.

Lane, Winfred Howard, Brattleboro, Vt.; University of Vermont College of Medicine, Burlington, 1899; died October 23, aged 75, of pneumonia.

Lyon, Don Dee ⊕ Olympia, Wash.; Harvard Medical School, Boston, 1920; certified by the National Board of Medical Examiners; on the staff of St. Peter's Hospital; died October 27, aged 58, of carcinoma of the cecum.

Meyers, Judson Melvin, Superior, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the American Medical Association; fellow of the American College of Surgeons; served on the staff of St. Mary's Hospital, where he died recently, aged 74, of cerebral vascular disease.

Orr, James Arthur, Paris, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1914; member of the American Medical Association; served during World War I; past president of the Bourbon County Medical Society; served as president of the Massie Memorial Hospital staff; for many years surgeon for the Louisville and Nashville Railroad Company; died September 24, aged 72.

Thomas, Norman Goodsell, Madison, Wis.; University of Wisconsin Medical School, Madison, 1931; member of the American Medical Association; formerly on the faculty of his alma mater; died September 22, aged 46.

Trigg, Ross B., Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1908; Jefferson Medical College of Philadelphia, 1909; member of the American Medical Association; past president and secretary of the Texas Railway Surgeons' Association and when it changed its name to Texas Railway and Traumatic Surgical Association, continued to serve as secretary-treasurer for many years; died recently, aged 66, of cerebral hemorrhage.

Wells, Edgar Kennard, Masontown, Pa.; Jefferson Medical College of Philadelphia, 1907; died in the Uniontown (Pa.) Hospital October 12, aged 68.

Whitlatch, Irving Alcedo, Milan, Ind.; University of Louisville (Ky.) Medical Department, 1911; member of the American Medical Association; served during World War I; medical examiner for the Selective Service System during World War II; for many years member of the school board; died November 13, aged 69, of coronary thrombosis.

Wilson, Henry, Clearwater, Fla.; Western Pennsylvania Medical College, Pittsburgh, 1894; formerly practiced in Somerset, Pa., where he was president of the Somerset County Medical Society; died November 13, aged 94.

Witt, Lazarus L., Indianapolis; Baltimore Medical College, 1893; died in General Hospital November 13, aged 87, of heart disease.

Woods, Hugh Bechtell ⊕ Des Moines, Iowa; Drake University College of Medicine, Des Moines, 1903; on the staffs of Iowa Methodist Hospital, Mercy Hospital, and Iowa Lutheran Hospital, where he died November 17, aged 74, of ruptured aortic aneurysm.

Wosika, Paul Henry ⊕ Chicago; Northwestern University Medical School, Chicago, 1931; associate professor of medicine at Chicago Medical School; specialist certified by the American Board of Internal Medicine; member of the Central Society for Clinical Research; fellow of the American College of Physicians; president of the staff of the Illinois Masonic Hospital; cardiac consultant, Cook County Infirmary in Oak Forest, Ill.; died recently in Crete, Ill., aged 46, in the crash of his private plane.

Wright, Walter Edgar, Tulsa, Okla.; University of Louisville (Ky.) Medical Department, 1906; past president of the Tulsa County Medical Society; Tulsa's first city superintendent of public health; died in Bardstown, Ky., October 21, aged 69.

GOVERNMENT SERVICES

SELECTIVE SERVICE SYSTEM

Priorities.—The National Advisory Committee to the Selective Service System, 1712 G Street Northwest, Washington 25, D. C., released January 9 the following information: The priorities of individual registrants are determined by the Selective Service System, whereas the priorities of reserve officers, once they are commissioned, are determined by the Department of Defense. By and large, these two systems are identical. One difference in them has just come to our attention.

It seems that when the Department of Defense established their priorities at the request of the President, in referring to the service rendered subsequent to participation in government educational programs, or deferment by Selective Service for education, they included the phrase: "as a commissioned officer." This means, for example, that a man who had 94 days of active duty as a seaman, first-class, following the completion of his V-12 training, is in Priority 2 if he is a special registrant, and Priority 1 if he is a reserve officer.

There are two other points in connection with priorities which may be of assistance:

Internship, whether or not it occurred in a civilian hospital, or a service hospital while the officer was on active duty, does not count as active duty in determining priority.

An individual who enjoyed a 4-F classification throughout his attendance in school during the period between Dec. 7, 1941, and March 31, 1947, is not considered to have been deferred, and therefore is in Priority 3. In this connection it should be noted that many of them held, at various times, different classifications. In some cases, at one time a 4-F; at another time, a 2-A. If they held a 2-A classification at any time during this specified period and were pursuing their educational endeavors, they are considered to have been deferred for that purpose.

Alien Physicians.—Citizens of Canada and some other countries that do not have special treaty arrangements who enter this country as aliens on a visa to accept employment such as residency and who hold the degree of Doctor of Medicine, must register as special registrants within five days of the time of their entry into this country if they have not attained their 50th birthday. Such aliens who have not attained their 26th birthday must also register as regular registrants within six months from the date of their entry into this country. After registration and unless otherwise entitled to a deferment, they will be liable for induction into the armed forces on the same basis as citizens of the United States.

In addition, as special registrants who presumably had no prior service or training during World War II in the armed forces of the United States, they fall into Priority 3.

ARMY

Chief of Women's Specialist Corps Retires.—Col. Emma E. Vogel, Chief of the Women's Medical Specialist Corps, was honored by the Military District of Washington at a retirement ceremony at Fort Meyer, Va., Nov. 29, 1951.

Colonel Vogel's Army career began in 1919 when she was appointed a physical therapist at Army General Hospital No. 24, near Pittsburgh, Pa. After World War I she helped organize the first postwar training course in the country for physical therapists. This course at Walter Reed Army Hospital was among the first such courses to receive professional recognition from the American Medical Association.

In 1942 Colonel Vogel was transferred to the Office of The Surgeon General of the Army. She was awarded the Legion of Merit for effectively organizing the Physical Therapist Branch and for formulating policies and plans to insure the highest standards for treatment for the sick and wounded. As the first chief of the Women's Medical Specialist Corps, Colonel Vogel headed what was formerly three separate groups in the Army Medical Service—dietitians, physical therapists, and occupational therapists. She is a charter member of the American Physical Therapy Association.

General Armstrong, The Surgeon General, said: "Her championship of the ever wider use of women's professional skills in the Army Medical Service has contributed immeasurably towards the high esteem enjoyed by the Women's Medical Specialist Corps today." Maj. Gen. Norman T. Kirk, retired, former Surgeon General, stated: "No woman, either as a civilian employee of the Medical Department, or a commissioned officer in one of its Corps, has made the contribution to the Medical Department that you have made." Colonel Vogel's present address is 3901 Connecticut Ave., N.W., Washington, D. C.

NAVY

Course in Medical Aspects of Special Weapons and Radioactive Isotopes.—A course of instruction in the medical aspects of special weapons and radioactive isotopes will convene at the Naval Medical School, Bethesda, Md., on February 11, and continue through February 16. The course is primarily for the benefit of inactive reserve medical department officers. A limited number of officers of the Medical Department on active duty will attend also. Problems likely to be confronted by medical and dental officers in the field of radioactivity will be presented and techniques employed to counteract these problems will be discussed.

Inactive reserve medical, dental, medical service corps, and nurse corps officers who reside in the 1, 3, 4, 5, 6, 8, and 9th Naval Districts and the Potomac River Naval Command may attend this course. Officers residing in these districts should submit a request for this training duty to the commandant of their respective districts at the earliest practicable date. Meals and a limited number of sleeping quarters are available. Quarters will be available on a first come, first served basis. The Surgeon General stated that the acceptance of orders to attend this course will not increase the possibility of involuntary recall to active duty of the personnel concerned.

AIR FORCE

Commendation for Dr. Samuel J. Crowe.—Dr. Samuel J. Crowe, consultant to the Surgeon General, has received a citation from the Secretary of the Air Force in appreciation of service rendered. Dr. Crowe, an otolaryngologist, volunteered his service to Wiesbaden Military Post and Hospital, Germany, while on leave from his duties in America. At a time of critical need in the European Command, he gave time to treat numerous complicated cases, to conduct lectures in the field of his specialty, and to instruct medical personnel. As a direct result of his efforts, the professional services provided for military and civilian members of the U. S. occupation were improved. Dr. Crowe's generous assistance and professional achievements, according to the citation, "reflect the highest credit on himself and the medical profession."

Today he is the director of the nose, throat, and ear clinic at Johns Hopkins University and Hospital—a post which he has held since 1912. He has been president of the American Otological Society. Dr. Crowe has dealt primarily with radium treatment of conditions causing deafness in children, and aerotitis in flying personnel of the Armed Forces.

American Board Visits Air Force School.—The American Board of Preventive Medicine and Public Health and two physicians from the Council on Medical Education and Hospitals of the American Medical Association spent three days (January 18-20) at the Air Force School of Aviation Medicine at Randolph Field, Texas. Headed by Dr. Walter L. Bierring, Des Moines, Iowa, board chairman, the group gave three days of intensive study and examination of the school's educational and research facilities and activities. The group was accompanied by Eustace

W. Tomlinson, a New York City attorney and legal counsel to the preventive medicine board, by a group of military dignitaries, and by Dr. Conrad Berens, New York, consultant to the Surgeon General, and Dr. John Hume of Baltimore.

The agenda for the three-day conference included a résumé of aviation medicine in its broader aspects; a briefing on the educational and research missions of the School of Aviation Medicine; a detailed analysis of the new five-year program of education and training in aviation medicine; and a complete tour of all the laboratories at the school.

VETERANS ADMINISTRATION

Residents Wanted.—Approved three-year residencies in internal medicine are available at the Veterans Administration Hospital, Augusta, Ga. These residencies are under the supervision of the dean's committee and Virgil P. Sydenstricker, M.D., professor of medicine at the Medical College of Georgia in Augusta. A one, two, or three-year training program may be arranged with salaries ranging from $2,400 to $3,000 per annum.

Approved two-year residencies in psychiatry are also available. These residencies are under the supervision of the dean's committee, and Hervey M. Cleckley, M.D., professor of neuropsychiatry at the Medical College of Georgia in Augusta. A one or two-year program may be arranged, with salaries depending on experience, ranging from $2,400 to $3,000 per annum.

For information, write William V. Walsh, M.D., Chief of Professional Services, Veterans Administration Hospital, Augusta, Ga., or William J. Cranston, M.D., Chairman, Dean's Committee, 1345 Greene St., Augusta, Ga.

Personal.—Dr. Henry W. Walters, manager of the Veterans Administration Hospital, Sunmount, N. Y., has become chief of the tuberculosis section in the area medical office at Fort Snelling, Minn. He will supervise all tuberculosis hospitals and tuberculosis sections in general medical hospitals in the 10-state area having headquarters at Fort Snelling. Dr. Walters has been with the VA since January, 1938.

Hospital News.—On November 15, Dr. Sandor Lorand, clinical professor of psychoanalytic psychiatry, New York University College of Medicine at New York City, conducted a seminar at the Veterans Administration Hospital, Northport, L. I., New York.

PUBLIC HEALTH SERVICE

Planning for Hospital Equipment.—A series of seminars on planning for hospital equipment is being conducted by the Equipment and Supply Branch of the U. S. Public Health Service. The three-day sessions are being held to acquaint local architects, engineers, and hospital administrators who are in the stage of hospital planning with new developments in hospital equipment and arrangement. A similar seminar was held in Hartford, Conn., in November, 1951. Two more are scheduled for San Francisco and Seattle in January.

Staff members of the Division of Hospital Facilities are conducting the meetings with the assistance of personnel from the Public Health Service regional offices and from the State Hospital Construction agency offices. These equipment seminars are a part of the federal, state, and local cooperative program authorized by the National Hospital Survey and Construction Act to provide better patient care. This activity is under the general direction of John W. Cronin, M.D., chief, Division of Hospital Facilities, U. S. Public Health Service.

Examination for Nurse Officers.—The Public Health Service will hold a competitive examination for the appointment of nurse officers in the regular corps on June 3-5, 1952, in various cities. Completed applications must be in the Washington office by April 30. The examination will include written professional tests, an oral interview, and a physical examination. Appointments are permanent and provide career opportunities in the fields of clinical and public health nursing. Appointments in clinical nursing will be made in the grades of junior assistant, assistant, and senior assistant, equivalent to Navy ranks of ensign, lieutenant, j.g., and lieutenant respectively. Appointments to public health nursing positions will be made in the assistant and senior assistant grades only. Entrance pay for officers without dependents ranges from $3,789 to $5,166, including rental and subsistence allowances. Officers enjoy usual military benefits. Applicants must be United States citizens and must expect to complete the following requirements no later than March 3, 1953: registration as a graduate professional nurse, graduation from an approved school of nursing, and receipt of a bachelor's degree from a recognized college or university. For appointments above the junior assistant grade, specific experience requirements have been established for both clinical and public health nurses.

For information write to Surgeon General, United States Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

New System for Morbidity Reports.—A new system of national morbidity reporting went into effect Jan. 1, 1952, according to the National Office of Vital Statistics. The modifications will more nearly meet the needs of both state and federal agencies and aid in providing essential information for civil defense. A manual of instructions has been sent to all state and territorial health officers.

The main change in the revised system is the addition of eight diseases to the list that states have been reporting each week to the Public Health Service, namely: botulism, brucellosis, dengue, infectious hepatitis, malaria, rabies in man, trichinosis, and typhus fever. Influenza and pneumonia will no longer be reported weekly or annually. It is believed that a better estimate of the prevalence of these diseases can be obtained through reports of respiratory outbreaks and of appropriate laboratory examinations, in combination with mortality records.

Statistics for the 25 diseases now on the weekly list will appear in summary form for the United States in the *Communicable Disease Summary* and for each state and in the *Morbidity and Mortality Report*, both published weekly by the National Office of Vital Statistics. Instead of monthly summaries of communicable diseases states will now submit annual summaries of 39 diseases by month and by county of residence. The summaries by county of residence will not be published generally but will be made available to persons who request such information. Reports of disease outbreaks will continue to be published on a current basis.

Decreased Incidence of Venereal Disease.—Less syphilis was reported in the United States in 1951 than in any year since 1929 and less gonorrhea than in any year since 1942, according to the Public Health Service. There were a total, among civilians, of over 198,000 cases of syphilis, more than 18,000 of which were in the early infectious stages, about 52,000 in the early latent stage, and 107,000 in the later stages. More than 12,000 were congenital cases. Gonorrhea is still reported in the hundreds of thousands of cases—270,000 in 1951. The estimated U. S. annual minimum incidence of syphilis among civilians has been 214,000 in 1947, 178,000 in 1948, 139,000 in 1949, 98,000 in 1950, and 71,000 in 1951.

The basic facilities of the National Venereal Disease Control Program are the rapid treatment centers and the approximately 2,200 clinics which are state and locally operated. In these clinics 2.4 million diagnostic observations resulted in the admission to clinics for treatment of 366,000 cases of venereal disease in 1951. Admissions to venereal disease inpatient treatment centers numbered 110,000 in 1951.

Research Fellowships.—May 1, 1952, is the deadline for the receipt of applications for Public Health Service research fellowships to begin between July 15, 1952, and March 14, 1953, Surgeon General Scheele has announced. Applications for fellowships to begin between Nov. 15, 1952, and July 14, 1953, should be submitted by Sept. 1, 1952. Applications and supporting documents should be sent to the Division of Research Grants and Fellowships, National Institutes of Health, Bethesda 14, Md.

Huguenin, director of the Gustave Roussy Cancer Institute, read a paper before the Medical Society of the Paris Hospitals on the treatment of pulmonary metastases of other types of cancers with the drug. A typical case is that of a child treated in March, 1950, with roentgentherapy for a right abdominal tumor. On July 11, 1950, ablation of the right kidney was performed, and renal blastoma was demonstrated microscopically. On Sept. 29, 1950, roentgen examination of the lungs showed metastatic seeding at the right base. The child was given 1.5 gm. of the drug daily. The drug was well tolerated, and, by Oct. 24, 1950, the pulmonary opacity had disappeared. A urogram made on June 13, 1951, showed the kidney had remained normal; apparently recovery had been maintained for three months. In another child, treated for lumbar sympathoblastoma with medullar metastasis, early metastatic seeding of both lungs was found. A daily dose of 1.5 gm. of paraoxypropiophenone was administered, and after two months the lung fields became normal again; however, four months later new pulmonary metastasis, not responsive to paraoxypropiophenone, developed. The author emphasizes that the drug had no effect on the primary tumor. Although he is unable to explain the mode of action of this drug on pulmonary metastasis, he believes that it is governed by certain laws: 1. The product has a better action on the recent metastasis. 2. The metastasis does not necessarily occur in the same location as the first tumor. Professor Huguenin stresses that one should be cautious in drawing conclusions from these successes.

Treatment of Chronic Myeloid Leukemia with Thiouracil.—In 1947, Hansen-Pruss treated six cases of myeloid leukemia with large daily doses of thiouracil (1.5 gm.). In one case, there was a noticeable improvement. In the five others, this treatment was given in conjunction with radiotherapy, thus, conclusions could not be drawn concerning the therapeutic value of thiouracil. At a recent meeting of the Medical Society of the Paris Hospitals, Professors Jean Bernard, G. Deltour, D. Christol, E. Velez, and P. Colvez discussed their observations on three cases of chronic myeloid leukemia treated with thiouracil. Velez observed a woman patient in Lima, Peru, under observation for leukemia, who was admitted to the hospital after attempting suicide with a large dose of thiouracil. On admission, the leukotes were found to be reduced from 100,000 to 20,000. Further uction occurred during the following five days, with the total appearance of immature forms. The myelogram became noral, and the clinical condition improved rapidly. J. Bernard discussed the case of a patient who, on Nov. 24, 1950, had 3,320,000 erythrocytes, 496,000 leukocytes, with 92% neutrophils, and a large spleen. Ten courses of radiotherapy reduced the leukocytes to 16,400 and increased the number of red blood cells to 4,240,000. On May 16, 1951, the hemogram again showed 3,372,000 red blood cells, and 191,000 leukocytes, with 91.5% neutrophils; there were 156,000 platelets. On June 4, 1951, a 22 day course of thiouracil, administered in doses of 200 mg. was started. The medication was well tolerated; the condition improved rapidly; the red blood cells increased to 4,750,000; the number of white blood cells fell to 6,000, and the platelets increased to 560,000. Hemogram and myelogram results were normal. In two other cases, equally favorable results were obtained.

SWEDEN

Sickness Risks for Hospital Nurses.—At a meeting of the Gothenburg Medical Society, Dr. Nils Faxén gave a statistical analysis of the incidence of sickness between September, 1937, and December, 1950 among 889 probationary nurses in Gothenburg. On classifying disease incidence according to hospital departments, it was found that the sickness rate was highest in the epidemic department and second highest in the ear department. The children's department was third with a comparatively high sickness rate, which, however, was not nearly so high as the rate in the epidemic department, which averages 12 days of sickness for every 100 working days. Classification based on the different diseases revealed that diseases of the respiratory tract had a remarkably high incidence. Scarlet fever came next, and polyarthritis was the cause of illness in 51 cases. As expected, much of the illness in the epidemic department was due to scarlet fever, infections of the respiratory tract, and such specific children's diseases as measles and rubeola. The high hepatitis rate among nurses doing laboratory work was impressive but not surprising. This can be traced to the risk of inoculation during the examination of morbid material.

Dr. Faxén also showed that during the period under review there had been a general reduction in the sickness rate among hospital nurses. He traced this change partly to the increasing use of antibiotics in the different hospital departments. Patients treated with penicillin are less prone to transmit disease; for example, the chance of a nurse contracting scarlet fever in hospitals have diminished considerably. The fall in the hepatitis rate among nurses is certainly due to the precautions recently taken to prevent accidental inoculation. It is curious that the ear department has not participated in this change; however, this may be due to the fact that the nurses are in close contact with patients suffering from ear diseases that are not amenable to penicillin treatment. The striking decline of the incidence of polyarthritis may be attributed to the increased use of penicillin. Dr. Faxén concluded with the consoling reflexion that although the cost of antibiotics has imposed a heavy financial burden on hospitals, this drawback is more than compensated for by the more effective and rapid cure of patients and by the increased efficiency of hospital staffs.

Operative Treatment of Mitral Stenosis.—The attitude taken toward the C. Lillingston surgical treatment of mitral stenosis by the two teams in Sweden especially interested in this disease is cautious but hopeful. They are inclined to limit surgical treatment to patients with "pure" mitral stenosis, which occurs without great mitral or aortic insufficiency; equal importance is attached to the functional capacity of the myocardium as related to the degree of mitral insufficiency. In the medical department of a large hospital in Malmö, Dr. G. Biörck, Dr. P. Hall, and Dr. I. Jansson have undertaken a statistical study of this disease that has been published in the September 21 issue of the journal of the Swedish Medical Association, *Svenska Läkartidningen.* After studying all the case records for this department in 1950, they found that among 3,384 cases, there were 120 cases of valvular disease of the heart. Among these, there were 65 cases of "pure" mitral stenosis and 23 cases in which mitral disease was combined with disease of the aorta. In approximately half the cases, there was a definite history of a rheumatic infection. The average age of the patients was high, a fact that may reflect that some fundamental biologic change is taking place in the character of rheumatic infections at the present time and that a higher standard of living and better medical treatment has proved effective. Three patients with "pure" mitral stenosis underwent surgical treatment.

With the fact in mind that the Malmö Hospital serves a community of 200,000 persons and the life expectancy after the development of mitral disease is approximately 15 years, the authors based their calculations on the number of cases of "pure" and complicated mitral disease observed in 1950. In all Sweden, with a population of 7 million, there must be 10,000 "pure" cases of mitral disease. Recent wide-scale roentgen-ray examinations show that this estimate is approximately correct. The calculations show the difficulty of sifting out from thousands of cases those for which surgical treatment will prove permanently beneficial. An argument against such treatment is improved life expectancy of patients suffering from mitral stenosis.

Duration of BCG Allergy.—Since 1945 some 35,000 school children in the younger age groups in Stockholm have been vaccinated with BCG. On the initiative of the chief school medical officer, a follow-up study has been undertaken of some of these children by Dr. H. Enell, who tested them again with tuberculin and investigated the subsequent tuberculosis morbidity of the children according to whether they had or had not been vaccinated with BCG. In one school, in which 79% of the 1,100 children had been vaccinated, 93% were still tuberculin-positive several years after vaccination. Among all the children who had become tuberculin-positive after BCG vaccination, there was no one found at the follow-up examination with demonstrable signs of tuberculosis, whereas there were several cases of clinically demonstrable tuberculosis among the children who had not been treated with BCG.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Drunkenness: Under the Influence Caused by Alcohol and Drugs.—The defendant was charged with driving an automobile while under the influence of intoxicating liquor. From a judgment of conviction in the trial court, the defendant appealed to the superior court of Pennsylvania.

After the arrest, the defendant had a strong odor of alcohol on his breath, thick speech, a flushed complexion and a staggering gait. He admitted that he had had six beers. He contended, however, that his condition was due to an overdose of phenobarbital which his physician had prescribed. His physician admitted to having given him the prescription and testified, that, except for the odor, the drug could produce the same symptoms which indulgence in alcoholic beverages develops.

In his charge to the trial court, the judge instructed the jury "However, the commonwealth had charged this man with driving while under the influence of intoxicating liquor, and that is the sole question for you to determine. In other words, if you find that he was dizzy due to the phenobarbital that he took . . . if you find he was abnormal that night from that cause, then you should acquit him under this bill, unless you also find that the liquor he consumed contributed to some extent to his condition. . . . In other words, if you find from all the evidence he was under the influence of phenobarbital and intoxicating liquor, and you find that to be a fact beyond a reasonable doubt, then you can find him guilty. But, if you find that his condition, that he was abnormal, due entirely to phenobarbital, then you should acquit him." This portion of the charge is the target of the defendant's arguments, said the superior court. The defendant's complaint is directed to the statement that if "he was under the influence of phenobarbital and intoxicating liquor" he violated the statute. He argued that the vehicle code, defining the crime, mentions intoxicating liquors, or narcotics or habit-forming drugs, in the disjunctive, and that therefore he can be convicted upon an indictment charging driving while under the influence of intoxicating liquor only by proof that liquor was the sole influence and must be acquitted where the condition is created by a combination of liquor and a habit-forming drug. In short, his position is that the abnormal condition was produced by the drug, not the beer, and that he should have been indicted for driving while under the influence of the drug. He seeks to exculpate himself by showing that he committed a crime other than that which he was charged.

As pointed out in the charge, men's tolerance for alcohol differs, and variant conditions, such as fatigue, lack of sleep, and physical defects, contribute with liquor to cause an abnormal condition. To those variables might be added the factors of heat and cold, atmospheric pressure and altitude, lack of food or consumption of some types of food. These may contribute to the efficacy of liquor. Doubtless, a drug or medicine may also be a contributing factor. They "contribute" in the sense in which the trial judge used the word in his charge; that is, they furnish a share or constituent part of a combination. The question was which of the two combined elements, the beer or the drug, was the efficient cause of the condition. In substance, the charge submitted that question to the jury, and there is no error in the charge or in the verdict.

It would be an intolerable burden to require the Commonwealth to prove that liquor was the sole cause, and the statute does not require it. If liquor shares its influence with another influence and is still the activating cause of the condition which the statute denounces it can be truthfully said that the driver was under the influence of liquor.

Accordingly the judgment of conviction was affirmed. *Commonwealth v. Rex, 82 A (2d) 315 (Penn. 1951).*

Chiropractic: Chiropractor as "Legally Licensed Physician."—The plaintiff filed a claim for temporary disability benefits under a private insurance plan carried by the defendant employer. From a determination in favor of the plaintiff, the defendant appealed to the superior court of New Jersey, appellate division.

The plaintiff was unable to continue her duties and had to leave her work as a "looper" in the defendant's hosiery mill because she was suffering pain and could not raise her left arm. This condition caused her to remain away from work about three months. A part of this three-months absence was spent under the care of a legally licensed chiropractor and the sole issue in this case, said the court, was whether the plaintiff was entitled to the benefits provided by the statute for the period during which she was under the care of the chiropractor.

The temporary disability benefits law provides that no benefits shall be payable "for any period during which a claimant is not under the care of a legally licensed physician" and the pertinent provision of the insurance policy covering the defendant employer's private plan contains an identical provision. The hearing officer concluded that a duly licensed chiropractor is a legally licensed physician within the meaning of the statute, when his treatment does not exceed the scope of his license and the hearing officer found that the treatment of the plaintiff by the chiropractor was within such scope. The defendant employer contended that the plaintiff was not "under the care of a legally licensed physician" while she was being treated by the chiropractor and, therefore, was not entitled to benefits under the statute for such period.

The practice of medicine and surgery, said the court, is regulated by the statute commonly known as the Medicine and Surgery Act. The same act also regulates the practice of chiropractic. A license to practice chiropractic is a license to practice medicine limited to the detecting and adjusting, by hand only, of vertebral subluxations. A license to practice under this act is granted by the State Board of Medical Examiners, on which a chiropractor is a full member. Licenses are issued to qualified persons to practice "medicine and surgery," or "osteopathy," or "chiropractic." Technically, said the court, no one under the act is "legally licensed" to practice as a "physician."

Continuing, the court said that the temporary disability benefits law does not define the term "legally licensed physician" nor does it restrict its application to practitioners of any particular branch of the practice of medicine or surgery. A "physician" is a "person skilled in physic or the art of healing, one duly authorized to treat diseases, especially by medicine." The term is not confined to the members of any one class of practitioners; it most frequently is used to mean a doctor practicing medicine and surgery in all its branches, yet it also connotes legally licensed practitioners of other more limited schools. There is nothing in the temporary disability benefits law to put an employee on notice to seek treatment only by a physician licensed to practice medicine and surgery in all its branches. The purpose of the provision in the law with respect to allowance of benefits for such period as the claimant is under the care of "legally licensed physician" is obviously intended to guard against fraudulent claims and should be construed from that point of view. At most, there is an ambiguity arising out of the use of the term "legally licensed physician." Many persons for whose benefits this law was enacted consult chiropractors in the belief that they are dealing with legally licensed physicians. The licensing of chiropractors under the medical practice act encourages them in this belief. It would be unjust under such circumstances to construe the temporary disability benefits law so narrowly as to deprive worthy claimants of the benefits thereunder. The chiropractor who treated plaintiff during the period in question was admittedly legally licensed and there is nothing in the record indicating that he was not a legally licensed physician within the intendment of the socially progressive and remedial temporary disability benefits law.

Accordingly the judgment of the hearing officer in favor of the plaintiff was affirmed.—*Thomas v. Carlton Hosiery Mills, 81 A (2d) 365 (New Jersey 1951).*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Neurology and Psychiatry, Chicago

66:537-668 (Nov.) 1951

Spasticity, Pseudospontaneous Spasms, and Other Reflex Activities Late After Injury to Spinal Cord. L. J. Pollock, B. Boshes, I. Finkelman and others.—p. 537.
Course and Prognosis of Disseminated Sclerosis in Relation to Age of Onset. R. Müller.—p. 561.
Precipitating Factors in Neuroses and Psychoses: Impressions and Reflections During 25 Years' Observation of Large Number of Cases, of Which 45 Presented Uncommon Opportunity for Follow-Up Study to Present Time. A. Gordon.—p. 571.
Types of Central Autonomic Innervation and Fatigue: Pupillographic Studies. O. Lowenstein and I. E. Loewenfeld.—p. 580.
*Neurological Changes in Anterior Poliomyelitis and Their Implications in Treatment. E. B. Schlesinger.—p. 600.
Myositis Ossificans Occurring in Poliomyelitis: Report of Case. W. E. Hess.—p. 606.
*Phantom Limbs of Patients with Spinal Cord Injury. E. Bors.—p. 610.

Neurological Changes in Poliomyelitis.—Schlesinger shows that the Kenny treatment of poliomyelitis is sound in respect to preventing deformity, shortening of muscles, and loss of muscle volume by range-of-motion exercises, but the basic concepts are unsound physiologically and lead to ritualistic and empirical management of the disease process. Members of the medical profession have been quick to improve traditional techniques by adopting some of Kenny's methods, but have been uncritical of her concepts. This is in part due to neglect of the disease by the neurologist and misinterpretation of clinical signs by less skilled students of the nervous system. The concept of treatment as largely a problem in combating muscle spasm is erroneous. The term "muscle spasm" as used in describing clinical patterns in poliomyelitis bears no resemblance to the term as understood by the neurologist. The clinical changes in poliomyelitis represent progressive involvement of the central nervous system and vary strikingly from case to case, depending on the areas affected and the severity of the lesions. Three phases of neurological changes and their implications are described. In the first phase there are meningismus and an increase in muscle tone secondary to disruption of central nervous mechanisms, with release of primitive postural patterns. In the second phase the general response recedes, while local symptoms become more prominent but still reflect much more than simple anterior horn cell disease. In the third phase all clinical signs of central reaction other than irreversible changes gradually disappear, and chronic changes in the muscles as a sequel to degeneration of the ventral horn cells are superimposed. The author shows the fallacy of attempting to treat all phases by a single therapeutic agent, either thermal or pharmacologic. To be of value, such treatment as hot packs and muscle relaxants must be employed in relation to the mechanisms in action at a given point in the progress of the disease. The evidence discounts the value of muscle relaxants during at least one phase of the acute disease.

Phantom Limbs with Spinal Cord Injury.—This report concerns the phantom sensations of 50 patients with spinal cord injuries, of 7 patients with spinal cord damage and various amputations, and of 12 patients following chordotomy. The paraplegia phantom, like the amputation phantom, was derived from surface, postural, and visual impressions. Unlike the phantom of the amputee, the paraplegia phantom had no telescoping effect or shrinkage if the cord lesion was complete, and the p tom length and position were not altered by postural cha or by vasomotor stimulation of the intact extremities. patients reported volitional movements of the phantom, as as occasional homolateral associated movements. The most quently noted willed movement occurred in the anal sphin Phantoms of unpaired organs were observed. Phantoms o bladder and rectum were rare (7 and 11, respectively), but t of the penis and erection were somewhat more frequent (19 14, respectively). When paralyzed parts were amputated a time of the cord injury or later, like the paraplegia phantom phantom did not change length, if the lesion of the cord complete; with partial lesion of the cord the length and pos of the phantom were altered with postural changes of the and vasomotor stimulation. Spinal cord injury following a tation caused cessation of phantom pain, and the phanto the absent extremity became less distinct than that of th maining limb. When cord injury coincided with amputation nonparalyzed part, the intensity of the amputation phanto compared with that of the paraplegia phantom depended o extent of amputation. When only the third, fourth, and fingers were lost, the paraplegia phantom was more in than the amputation phantom; but when the forearm was putated, the situation was reversed and the amputation pha overshadowed the paraplegia phantom. Chordotomy c phantom changes in a small number of cases; it made the tion phantom, and occasionally the rectum phantom, disap it made some of the phantoms of toe, instep, and calf pronounced. A resemblance of the painful paraplegia pha to causalgia was observed.

A.M.A. Arch. Otolaryngology, Chicago

54:341-466 (Oct.) 1951

*Endoscopic Removal of Lipoma of Bronchus: Report of Two M. L. Som and S. S. Feuerstein.—p. 341.
Observations on Anatomy of Tympanic Plexus and Technique of panosympathectomy. P. Frenckner.—p. 347.
New Approach to Ventral Deflections of Nasal Septum. S. Fomon, Bell, E. L. Berger and others.—p. 356.
Statistical Study of Pure Tone Audiometry in Relation to Fenest Operation. C. M. Kos.—p. 367.
*Tumors of Glomus Jugulare Not Associated with Jugular Vein. T. ship and J. Louzan.—p. 378.
Postoperative Nasal Bleeding. D. M. Mayer and W. A. Swanker.—p
Lymphoepithelioma of Nasopharynx. E. A. Thompson.—p. 390.
Otogenous Intracranial Complications. J. Elsen, E. A. Friedma N. Leshin.—p. 409.
Tonsils and Adenoids. L. E. Adin Jr. and J. D. Singleton.—p. 428.

Lipoma of Bronchus.—The authors report two cases of b pedunculated lipoma of the bronchus in two men aged 5 59, respectively. One patient had had recurrent pneumoni 15 years, and the other had had a chronic cough for se years. Both had hemoptysis. Roentgenograms of the chest cated the presence of bronchial obstruction with atelectasi infection. The lipomas were removed endoscopically, an patients have remained symptom-free. These cases emph that, even after long-standing infection with bronchial ob tion, improvement or restitution to normal can be expected i affected lobe if the patency of the bronchus is reestabli There is no indication for lobectomy in cases of this kind when lipomas occur in lung parenchyma, removal of the may be necessary for cure.

Glomus Jugulare Tumors.—The glomus jugulare is a small cular body histologically identical with the carotid bodies other nonchromaffin paragangliomas. It occurs normally the course of the tympanic branch of the glossophary nerve or the auricular branch of the vagus, and in more half of the cases it is found in the adventitia of the don the jugular bulb. It may give rise to a tumor that erodes the middle ear and produces progressive loss of hearing, ch otorrhea, and a vascular polyp. If the tumor erodes adj structures, pain with paralysis of cranial nerves may r Few alarming symptoms occur until late in the course o

---

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

disease, when complete removal is difficult or impossible. Complete excision is necessary, since benign and malignant lesions of this type are grossly indistinguishable. The tumors are reported to be radioresistant. The authors review the 42 cases in the literature and report an additional case in which the tumor arose from the promontory of the middle ear and had no relation to the dome of the jugular bulb. In the cases studied, the glomus jugulare tumors tended to occur in families, and frequently carotid body tumors occurred in the affected patient or his family. Eighty per cent of the tumors appeared in women. The mortality rate was 34%.

A.M.A. Arch. Pathology, Chicago

52:299-402 (Oct.) 1951

Effect of Hypervitaminosis A and Hypovitaminosis A on Skeleton of Duck. R. H. Rigdon, J. C. Rude and J. G. Bieri.—p. 299.

Bone Marrow Embolism. J. H. Fisher.—p. 315.

Application of Emission Spectroscopy to Medical Problems: I. Spectrographic Techniques. I. L. Smith, E. Yeager, N. Kaufman and others. —p. 321.

Id.: II. Survey of Typical Applications. I. L. Smith, N. Kaufman, E. Yeager and others.—p. 332.

*Experimental Food-Aspiration Pneumonia. T. J. Moran.—p. 350.

Cerebral Demyelination and Focal Visceral Lesions in Case of Acute Hemorrhagic Pancreatitis, with Consideration of Possible Role of Circulating Enzymes in Causation of Lesions. F. S. Vogel.—p. 355.

Chondromucinase from Bovine Testis and Chondromucin of Umbilical Cord. R. D. Lillie, E. W. Emmart and A. M. Laskey.—p. 363.

Dynamics of Inflammation and of Repair: I. Trigger Mechanism of Acute Inflammation. V. H. Moon and G. Tarshakovec.—p. 369.

Morphological Changes of Adrenal Cortex in Frostbitten Rabbits With and Without Heparin Treatment. B. Hoelscher.—p. 378.

Food-Aspiration Pneumonia.—Food-aspiration pneumonia has not been widely recognized as a distinct clinical and pathological entity. This lack of recognition is due at least partly to the difficulty of detecting and identifying aspirated material in the pneumonic areas of involved lungs. Other investigators, who had stressed the importance of postoperative aspiration pneumonia, had suggested that particles of food might be found on microscopic examination of the lungs if enough sections were made. Moran found food particles in the areas of pneumonic reaction, and he noted that the reaction varied from an acute inflammatory process to a chronic granulomatous lesion with foreign-body giant-cell formation and fibrosis. Because food particles are found frequently in lungs of elderly persons with pneumonia, he produced food-aspiration pneumonia in animals to determine whether the pathological reactions were similar to those in man and to determine the approximate time intervals required for the development of various stages of the process. He describes the pneumonia produced in 60 adult guinea pigs by intratracheal injections of 1 cc. of various cooked foods. The reaction varied from an acute pneumonic process to a chronic granulomatous lesion with giant cell formation and fibrosis. The reactions to food produced in lungs of guinea pigs were almost identical with those observed in food-aspiration pneumonia in man. An important similarity was the occurrence of fairly large pneumonic areas without definitely recognizable food particles. This finding stresses the necessity of studying multiple sections from various areas when food-aspiration pneumonia is suspected. Food-aspiration pneumonia should be considered as a possible etiologic factor in any chronic granulomatous or fibrotic lung lesion of unknown cause.

American J. Digestive Diseases, Fort Wayne, Ind.

18:261-292 (Sept.) 1951

Inter-Relationship Between Cardiovascular Function and Gastro-Intestinal Disease. E. Suckle and G. K. Wharton.—p. 261.

Clinical Study of Pathogenesis of Diabetic Syndrome: Use of Modified Glucose Insulin Tolerance Test Combined with Change of Serum Inorganic Phosphorus After Glucose Administration. B. W. Volk and S. S. Lazarus.—p. 269.

Management of Bowel Dysfunctions in Children. E. E. P. Seidmon. —p. 274.

Effect of Mineral Oil on Food Utilization: II. Changes of Beta-Carotene in Mineral Oil. M. F. Paul, V. R. Ells and H. E. Paul.—p. 278.

Lysozyme Activity in Gastric Juice of Normal Adults: Preliminary Report. O. E. Lobstein and S. J. Fogelson.—p. 282.

Use of Adenosine-5-Mono Phosphate in Pruritus of Obstructive Jaundice. L. Pelner and S. Waldman.—p. 283.

Perforated Esophageal Ulcer. J. H. Coffey and I. Dravin.—p. 285.

American Journal of Ophthalmology, Chicago

34:1351-1482 (Oct.) 1951

Relief of Intractable Blepharospasm: Preliminary Report. S. A. Fox. —p. 1351.

Neomycin: Ocular-Tissue Tolerance and Penetration When Locally Applied in Rabbit Eye. A. W. Vogel, I. H. Leopold and A. Nichols. —p. 1357.

Comparison of Ortho-Rater and Sight-Screener Tests of Heterophoria with Standard Clinical Tests. L. L. Sloan and W. M. Rowland. —p. 1363.

Results of Various Operative Procedures in Acute Congestive Glaucoma. H. K. Goldberg.—p. 1376.

Optical Behavior of Sclera Transplanted into Cornea. J. E. Winkelman. —p. 1379.

Ocular Findings of Intracranial Tumor: Study of 358 Cases. M. A. Petrohelos and J. W. Henderson.—p. 1387.

Dynamics of Phakoerisis. D. O. Harrington.—p. 1395.

Effect of Anticoagulants on Clotting in Plasmoid Fluid and Its Significance for Intraocular Pressure. A. Zwiauer, H. Bornschein and E. Deutsch.—p. 1403.

Refractive and Ocular Findings in the Newborn. R. C. Cook and R. E. Glasscock.—p. 1407.

The Early Years of Helmholtz: In Commemoration of the Centenary of the Invention of Ophthalmoscope. B. Chance.—p. 1413.

Europe Through the Ophthalmoscope. W. J. Holmes.—p. 1421.

Sympathetic Ophthalmia: Following Purulent Endophthalmitis (Postcataract Extraction). M. M. Scheffler.—p. 1427.

Surgical Principles of Concomitant Convergent Strabismus. G. G. Gibson. —p. 1431.

Ultrastructure of Cornea and Lens Studied by Means of Electronic Microscope. M. Sebruyns.—p. 1437.

Ocular Findings of Intracranial Tumor.—This paper evaluates the signs of intracranial neoplasm encountered by the ophthalmologist. A total of 358 cases, of which 344 were surgically verified, are reviewed. 1. The incidence of papilledema was 59.5%. With tumors above the tentorium papilledema was present in 53.3% of cases, while with subtentorial tumors it was evident in 75.2%. 2. Optic atrophy was found in 12%. Primary optic atrophy occurred mainly with direct involvement of the nerve, chiasm, or tract. Secondary atrophy occurred in cases in which the tumor produced an early rise in intracranial pressure. 3. Abnormal findings were present in slightly less than half the cases in which the visual fields were examined. The findings permitted localization of the tumor in slightly more than 25% of the cases tested. 4. The statement of Walsh that pupillary changes are of little localizing value was supported by the present study. Anisocoria occurred in 12% of the series. 5. Defects of conjugate movement occurred in 5.6% of the cases. Involvement of upward conjugate gaze in pineal tumors appeared to have the greater value for localization. 6. Nystagmus was present in 10.9% of the series. It was frequent with tumors of the cerebellum. 7. Extraocular muscle palsies were found in 13.4% of the cases, but such palsies were of little value in lateralization.

American Journal of Proctology, New York

2:105-160 (Sept.) 1951

*Pilonidal Disease—Its Evaluation and Treatment: Report of 500 Cases. H. W. Parker.—p. 111.

Local Methods of Treatment of Carcinoma of Rectum. E. Wilson. —p. 121.

Rectovaginal Fistulae. I. Tractenberg.—p. 128.

Newer Hemostatic Agents. A. J. Cantor.—p. 131.

Pilonidal Disease.—The 500 unselected cases of pilonidal disease reviewed in this paper were operated on by Parker with one technique. Almost 40% of the patients had had at least one unsuccessful corrective operation, and many of the remainder had had simple incision and drainage. Only 20% had had no surgical treatment whatsoever. Many had been operated on two or three times, and one patient nine times. Sinuses recurred following a variety of operations, including open excision and drainage, marsupialization, the pedicle-flap operation, partial closure, complete closure, excision with secondary graft, excision with lateral incisions, complete closure with tension, and excision en bloc with cautery. A study of these failures at the operating table disclosed one common fault, that is, some part of the sinus tract was not excised. In some cases the entire tract was missed. After discussing the types of infection and their role in recurrence, the author describes his surgical technique. It resembles a marsupialization technique except that an effort is made to enucleate the entire cyst wall rather than to save part of it, and interrupted pulley sutures are employed to bring the skin edges down without tension to the sacral fascia. All cases were treated in the same way. Chronic, quiescent infection or an acutely infected pilonidal cyst or abscess was drained and the cyst or sinus excised and sutured. There were less than 1% failures in this series. The average healing time was three to five weeks.

American Journal of Psychiatry, New York

108:241-320 (Oct.) 1951

Treatment of Sex Offender in Denmark. P. W. Tappan.—p. 241.
Problem of the Sex Offender. K. M. Bowman.—p. 250.
Objective Methods of Evaluating Process and Outcome in Psychotherapy. J. G. Miller.—p. 258.
*Ten-Year Follow-Up Study of Electrocoma Therapy. J. L. Fetterman, V. M. Victoroff and J. Horrocks.—p. 264.
Profile of Hospital Functioning. R. M. Chambers, M. A. Tarumianz and K. E. Appel.—p. 271.
Psychiatric Aspects of Hospital Administration. C. N. Baganz.—p. 277.
Conditional Responses in Patients Receiving Electric Shock Treatment. S. Fleck and W. H. Gantt.—p. 280.
Grief Reactions in Later Life. K. Stern, G. M. Williams and M. Prados. —p. 289.
Possibility of Predicting Huntington's Chorea by Electroencephalographic Study. B. Harvald.—p. 295.
Psychotherapeutic Principles in Casework Interviewing. J. V. Coleman. —p. 298.
Study of Results in Hospital Treatment of Drug Addictions. R. G. Knight and C. T. Prout.—p. 303.

Electrocoma Therapy: Follow-Up Study.—Fetterman and associates regard the term electrocoma as more descriptive and psychologically more desirable than electroshock, since it avoids the unpleasant connotation of "shock." They report on the status of 100 patients treated 9 to 10 years ago in private sanitoriums. The diagnoses included manic-depression in 50 cases, manic psychosis in 3, schizodepression in 4, schizophrenia in 29, involutional melancholia in 11, and other types of mental disorders in 3. The immediate results of treatment were, on the whole, excellent, with relief of symptoms in many psychoses. A 10-year follow-up of 65 patients in whom depression was the chief symptom revealed that 45 were relatively well, 16 moderately or slightly improved, and 4 unchanged or worse. Depression that necessitated further treatment recurred in 32 patients. After subsequent therapy, 18 were relatively well and 14 were in fair or poor conditions. The immediate complications were few and insignificant compared to the benefits obtained. The 9 to 10-year follow-up revealed no cumulative complications; there were no epilepsy, spinal deformities, or mental deterioration owing to the treatment. There were nine deaths, the first occurring 1 year and the last 10 years after treatment, from causes unrelated to the treatment. Ambulatory electrocoma therapy is effective. It saves time, money, prestige, and suffering, and makes possible a smoother integration of electrocoma therapy with other treatments. Present-day treatment makes it possible to administer electrocoma therapy in a relatively safe, comfortable manner. It has proved valuable in prevention of suicides. It is not a static but a growing technique that is being modified and improved.

American Journal of Surgery, New York

82:413-532 (Oct.) 1951

Malignant Neurilemomas of Peripheral Nerves. J. O. Vieta and G. T. Pack.—p. 416.
Diagnosis and Management of Ectopic Pregnancy. E. N. Bookrajian and C. Luther.—p. 432.
Parathyroid Adenoma. C. C. Blackwell.—p. 439.
Experimental Therapy of Raynaud's and Buerger's Diseases with Kutapressin. W. Marshall.—p. 448.
*Safe Method of Pancreatic Biopsy: Preliminary Report. H. B. Kirtland Jr.—p. 451.
Biliary Tract Surgery. U. Maes and G. N. Weiss.—p. 458.
Effect of Gelfoam® on Integrity of Intestinal Anastomosis. B. E. Chamberlain, J. E. Delmonico Jr. and R. O. Gregg.—p. 462.
Fascia Lata Repair of Massive Ventral Hernias. R. C. Austin and E. F. Damstra.—p. 466.
Inguinal Hernias Some Causes of Recurrence. A. R. Koontz.—p. 474.
Amputation of Lower Extremities in the Aged. H. M. Kern.—p. 479.

Pancreatic Biopsy.—It is often difficult at operation to distinguish between a benign and a resectable malignant mass in the head of the pancreas. Correct diagnosis is of great importance if patients with early malignant disease are to be cured and if patients with benign lesions are to be saved unnecess resections. Conventional biopsy is not routinely done because o the dangers of hemorrhage or fistula formation and because th biopsy specimen cannot be relied on for a correct diagnos Biopsy with the Vim-Silverman needle appears to be a safe and reliable method of biopsy of the pancreas. The technique is a follows: At laparotomy the pancreas is outlined on the posterio abdominal wall by entering the lesser sac through an incisio in the gastrocolic omentum or the gastrohepatic ligament. Th peritoneum overlying the pancreas is not incised. The out cannula with its obturator is introduced into the area of pa creas from which a biopsy specimen is desired. In the presen of neoplasm the needle is introduced until the increased resi tance usually accompanying carcinoma is encountered. Th outer cannula is then steadied to prevent further advance, th obturator is removed, and the inner biopsy needle is insert to the hilt. The inner biopsy needle is then steadied to preven its further advance and the outer cannula is advanced over ½ in. (1.3 cm.) and rotated through 360 degrees. The two needl are withdrawn simultaneously and the plug of tissue betwee the blades of the inner needle is placed on filter paper and the in preservative. Sections are prepared in the usual manner. Fin evaluation of this method will be possible only after it has bee used more extensively.

Am. Practitioner & Digest of Treatment, Philadelphia

2:833-920 (Oct.) 1951

Acute Nonbacterial Pneumonias. F. T. Billings Jr.—p. 833.
Orthopedic Management of Arthritis. P. L. Carnesale and M. W. Gar —p. 840.
Comparative Clinical Effectiveness of Cough Medication. L. J. Cass a W. S. Frederik.—p. 844.
Clinical Experiences in Use of Radioactive Phosphorus. W. M. Coop —p. 852.
Headache: Practical Considerations. A. P. Friedman and T. J. C. V Storch.—p. 855.
Debridement Using Catalytic Enzymes. R. Goldsmith and J. A. Sterli —p. 858.
Control of Menstrual Distress. S. L. Israel.—p. 863.
Alterations in Renal Function Associated with Surgical Procedur Their Physiology and Management. M. W. Schell.—p. 868.
Effect of ACTH in Surgical Treatment of Acne and Rhinophyma. A. Seltzer.—p. 882.

Cancer Research, Chicago

11:653-740 (Sept.) 1951. **Partial Index**

Differences in Immunologic Reactions of Red Blood Cells of Tum Susceptible (C3H) and Tumor-Resistant (C57) Mouse Strain. L. Ad berger.—p. 653.
Relation of Mitotic Activity to Effects of X-Rays and Nitrogen Must as Indicated by Growth of Corn Seedlings. M. A. Russell and F. Michelini.—p. 687.
Effect of Neoplasia or Pregnancy on Tissue Desoxypentosenucleic Ac L. S. Kelly, A. H. Payne, M. R. White and H. B. Jones.—p. 694.
Effect of Anti-Viral Substances on Mouse Mammary Tumor Milk Ag in Vivo. R. A. Malmgren and L. W. Law.—p. 697.
Sterilization of Leukemic Cells in Vivo and in Vitro. J. H. Burche M. A. Cremer, B. S. Williams and R. A. Armstrong.—p. 700.
Inhibition by Testosterone of Radiation-Induced Lymphoid Tumor velopment in Intact and Castrate Adult Male Mice. H. S. Kaplan a M. B. Brown.—p. 706.
Histochemical Demonstration of Esterase in Malignant Tumors. R. Cohen, M. M. Nachlas and A. M. Seligman.—p. 709.
Estrous Behavior and Mammary Cancer Incidence in Ovariectomize Mice in Relation to Caloric Intake. J. T. King, C. B. Cases and Visscher.—p. 712.
Heterologous Transplantation of *Human Tumors.* A. Towbin.—p. 71
Effect of Mammary Tumors on Glucuronidase and Esterase Activiti Number of *Mouse Strains.* S. L. Cohen and J. J. Bittner.—p. 72
Effect of Low Temperatures on Serial Transplantability of Mouse Sa coma 37. L. B. Walsh, D. Greiff and H. T. Blumenthal.—p. 727.
Energy Expenditure of Rats Bearing Walker Carcinoma 256. G. B. M L. D. Fenninger, F. L. Haven and J. J. Morton.—p. 731.
Virus-Induced Papilloma-to-Carcinoma Sequence: IV. Carcinomas Domestic Rabbits Infected While in Utero. R. G. Fischer and J. Syverton.—p. 737.

Cincinnati Journal of Medicine

32:321-354 (Sept.) 1951

Management of *Large Ovarian Tumors:* Report of Case. E. Rosen and J. D. Heiman.—p. 322.

Connecticut State Medical Journal, Hartford

15:887-956 (Oct.) 1951

Psychiatry in General Hospitals. W. H. Dunn.—p. 887.
Acute Pancreatitis: Analysis of 76 Cases with Especial Reference to Clinical Signs of Severity of Disease. R. S. Lampson, B. V. White and R. N. Davie.—p. 894.
Results of Diabetes Detection Drive. M. J. Albrink, L. Parente and A. Gelperin.—p. 897.
Calcified Cysts of Spleen: Report of Two Cases. W. M. Stahl and W. M. Stahl Jr.—p. 899.
•Coronary Artery Disease in Two Young Members of Family with Xanthomatosis and Hypercholesterolemia and Its Relationship to Problem of Atherosclerosis. H Z. Pomerantz, C. W. Kelly and S. J. Kowal.—p. 902.
Combined Antibiotic Therapy of Cavernous Sinus Thrombosis in an 18 Month Old Child—Case Report. J. M. O'Brien and T. P. Birney.—p. 908.
First Aid to Doctors: Medicine in American History. Rev. A. J. Riley.—p. 910.

Coronary Artery Disease, Xanthomatosis, and Hypercholesterolemia.—This paper presents observations on a family with a hereditary disorder of cholesterol metabolism. Of four siblings (three males and one female) three had hypercholesterolemia only. Two of the four had electrocardiographic and roentgenologic evidence of myocardial disease. Both of these had experienced angina and cardiac decompensation, and one of them died at the age of 41. The histories of these patients are reported and experimental and clinical evidence of the role of cholesterol in the pathogenesis of atherosclerosis is presented. The incidence of coronary artery disease in young men and women is compared and the frequency of coronary artery disease in young women with xanthomatosis is contrasted with the rarity of this disorder in young women in general. Hypertension and diabetes are important etiological diseases in the pathogenesis of atherosclerosis in both men and women but of prime importance in women, since coronary artery disease is almost never found in their absence (except in women with xanthomatosis). Nevertheless, in some men severe coronary artery disease develops in the absence of hypertension or diabetes. Many of these men are young and have myocardial infarction in their third and fourth decades. The evidence indicates that in this group hypercholesterolemia is of paramount importance and that it is not the result of a dietary phenomenon, but of a primary metabolic disturbance.

Endocrinology, Springfield, Ill.

49:289-428 (Sept.) 1951

Estrogenic, Androgenic and Gonadotrophic Activity in Wheat Germ Oil. E. Levin, J. F. Burns and V. K. Collins.—p. 289.
Reestablishment of Function in Transplanted Thyroid Glands of Mice. D. Bennett and A. Gorbman.—p. 310.
Effect of Adrenal Cortical Extract, 11-Desoxy-17-Hydroxycorticosterone Acetate (Compound S) and 11-Dehydrocorticosterone Acetate (Compound A) on Cardiovascular-Renal Action of Desoxycorticosterone Acetate. S. M. Friedman and C. L. Friedman.—p. 318.
•Increase in Formation and Secretion of ACTH Following Adrenalectomy. C. A. Gemzell, D. C. Van Dyke, C. A. Tobias and H. M. Evans.—p. 325.
Pituitary Gonadotropic Activity of Stalk-Sectioned Male Rats. R. J. Barrnett and R. O. Greep.—p. 337.
Accelerated Growth of Thyroid in Normal and "Hypophysectomized" Fetal Rats Given Thyrotrophin. A. E. Sethre and L. J. Wells.—p. 369.
Increased Oxygen Consumption, and Succinoxidase Activity of Liver Tissue After Exposure of Rats to Cold. R. W. You and E. A. Sellers.—p. 374.
Effect of Parenterally Administered Adrenocortical Extract on Intradermal Spreading Action of Hyaluronidase. M. A. Hayes and B. L. Baker.—p. 379.
Local Maintenance of Rabbit Corpus Luteum with Oestrogen. J. Hammond Jr. and J. M. Robson.—p. 384.
Role of Adrenal Steroids and ACTH in Gluconeogenesis: Study in Phloridzinized Animals. A. Segaloff and A. S. Many.—p. 390.
Twenty-Five Years of Research on Biochemistry of Thyroid Gland. C. Harington.—p. 401.
Estrogenic Activity of Estriol in Different Vehicles and Different Animals. B. Zondek and F. Sulman.—p. 417.
Effect of Thymus and Muscle Feeding upon Growth and Concentration of Radioiodine I^{131} in Thyroid and Other Tissues of Rat. J. B. Boatman and C. Moses.—p. 422.

Increase in Corticotropin After Adrenalectomy.—After adrenalectomy, when a pronounced reduction in circulating adrenocortical steroids is presumed, the concentration of corticotropin (ACTH) in the blood has been shown to increase. This paper describes a method for the estimation of plasma corticotropin after adrenalectomy, which, combined with the estimation of pituitary corticotropin and the distribution and removal rate of the hormone, makes it possible to calculate its rate of formation and secretion by the pituitary. Male rats were used in these studies, which revealed that the adrenal gland, through formation of cortical steroids, controls the secretion of corticotropin by the pituitary. Removal of the adrenals is reflected in an immediate and progressive increase in corticotropin secretion. This causes the pituitary corticotropin content to decrease until the progressively increasing corticotropin formation by the pituitary causes it to rise again. Adrenalectomy does not appreciably affect the corticotropin space or the disappearance rate of corticotropin. Three weeks after adrenalectomy, a new, approximately steady state is reached, characterized by a corticotropin content in the pituitary one and one-half times normal, an increased corticotropin content in the body fluids at least 30 times normal, and an increased corticotropin formation and secretion rate at least 30 times normal.

Indiana State Medical Assn. Journal, Indianapolis

44:909-1056 (Oct.) 1951

Provisional One-Stage Operation in Case of Gastrojejunocolic Fistula. S. Reisler.—p. 941.
Civilian Gunshot Wounds of Abdomen. F. J. Boyd Jr.—p. 945.
Cysticercus Cellulosae in Man: Case Report. H. E. Rothring and J. A. Robb.—p. 949.
Pulmonary Calcification and Histoplasmin Sensitivity in Northern Indiana. J. A. Shively and W. S. Tirman.—p. 951.

Journal of Allergy, St. Louis

22:387-486 (Sept.) 1951

Zone of Localization of Antitissue Antibodies as Determined by Use of Radioactive Tracers. D. Pressman.—p. 387.
Physiology of Pulmonary Circulation. W. F. Hamilton.—p. 397.
Pulmonary Function in Group of Young Patients with Bronchial Asthma. D. S. Lukas.—p. 411.
Potential Danger of Oxygen Therapy in Severe Bronchial Asthma. I. W. Schiller, H. D. Beale, W. Franklin and others.—p. 423.
Chemical Determination of Histamine in Blood in Health and Disease. P. F. deGara.—p. 429.
Theophylline Blood Levels After Insufflation of Micronized Aminophylline Powder. S. H. Waxler and H. B. Moy.—p. 434.
Fractionation of Pollen Extracts by Chromatography: I. Preliminary Studies with Ragweed Extract. A. Dankner, S. C. Bukantz, M. C. Johnson and H. L. Alexander.—p. 437.
Accuracy of Reported Ragweed Pollen Count as Measure of Actual Pollen Exposure of Individuals in That Community. R. S. Shapiro and R. Rooks.—p. 450.
Mycological Studies in Savannah Area—1950. B. T. Griffith.—p. 461.
Nickel and Cobalt Dermatitis. A. Rostenberg Jr. and A. J. Perkins.—p. 466.
Study of Incidence of Clinical and Immunologic (Reaginic) Allergy in Group of Medical Students. H. Miller.—p. 475.

Journal of Applied Physiology, Washington, D. C.

4:245-328 (Oct.) 1951

Theory of Reflex Controls to Explain Regulation of Body Temperature at Rest and During Exercise. H. C. Bazett.—p. 245.
Measurement of Heat Loss from Skin. H. M. Whyte.—p. 263.
•Nutritional Requirements for Men at Work in Cold, Temperate and Hot Environments. E. LeB. Gray, F. C. Consolazio and R. M. Kark.—p. 270.
Ergographic Method for Testing Ocular Muscles. K. S. Lion and E. R. Powsner.—p. 276.
Cardiovascular Responses Following Explosive Decompression of Macaque Monkeys to Extreme Altitudes. S. Gelfan and A. Y. Werner.—p. 280.
Capillary Fragility and Ecchymosis Test in Man. A. L. Copley and G. Kozam.—p. 311.

Nutritional Requirements at Different Temperatures.—Experiments were conducted to determine the role of heavy clothing in the increased energy output observed in colder climates. Measurements were made of the caloric output of men doing hard work in simulated tropical, temperate, and arctic climates while wearing successively light, medium, and heavy clothes. The work required considerable agility so that any binding or hobbling effect of the clothes would be a factor. It was observed that (*a*) when the temperature remained constant the caloric output for a given amount of external work was about 5% greater with arctic than with temperate clothing and about 5% greater with temperate than with tropical clothing; (*b*) when the weight of the clothing remained constant the caloric output was

2% greater at 60 than at 90 F and 2% greater at −15 than at +60 F. The change in metabolism due to the hobbling effect of the clothing appears to be at least twice as great as the change due to ambient temperature and appears to play a major role in the increased caloric requirements at lower temperatures.

Journal of Immunology, Baltimore

67:243-378 (Oct.) 1951

Antigen Elimination from Blood as Early Manifestation of Immune Response. D. W. Talmage, F. J. Dixon, S. C. Bukantz and G. J. Dammin.—p. 243.
Relationships Among Complement-Fixing Values, Infectious Endpoints, and Death Curves in Experimental Coxiella Burnetii Infection. R. A. Ormsbee, D. B. Lachman and E. G. Pickens.—p. 257.
Study of Cold Hemagglutinins for Normal Trypsinized Red Blood Cells in Serum of Normal Individuals and of Hemolytic Anemias. B. A. Bouroncle, M. C. Dodd and C. S. Wright.—p. 265.
Antibody in Lymphocytes from Hyperimmunized Rabbits. A. Erslev. —p. 281.
Precipitin Reactions with Soluble Antigens from Suspensions of Pasteurella Pestis or from Tissues of Animals Dead of Plague. C. L. Larson, C. B. Philip, W. C. Wicht and L. E. Hughes.—p. 289.
Stability of Desiccated Snake Venoms. W. H. A. Schöttler.—p. 299.
Studies on Chemotherapy of Vaccinia Virus: II. Activity of Some Thiosemicarbazones. D. Hamre, K. A. Brownlee and R. Donovick.—p. 305.
Hybridization of Coliphage T5 and Salmonella Phage PB. M. H. Adams. —p. 313.
Studies of Herpes Simplex Virus in Newborn Mice. E. D. Kilbourne and F. L. Horsfall Jr.—p. 321.
Increase in Virulence of Lansing Strain of Poliomyelitis Virus with Passage in Mice. J. D. Ainslie.—p. 331.
Determination of Antibody Through Use of I^{131} Label: Experiments with Equine Diphtheria Antitoxin. S. Cohen.—p. 339.
Production of Antibody by Patients with Chronic Hepatic Disease. W. P. Havens Jr., J. M. Shaffer and C. J. Hopke Jr.—p. 347.
Western Equine and St. Louis Encephalitis Viruses in Blood of Experimentally Infected Wild Birds and Epidemiological Implications of Findings. W. M. Hammon, W. C. Reeves and G. E. Sather.—p. 357.
Interference Between Mumps Virus and Pneumonia Virus of Mice (PVM). Fate of Mumps Virus in Mouse Lung. H. S. Ginsberg and F. L. Horsfall Jr.—p. 369.

Journal of Infectious Diseases, Chicago

89:109-208 (Sept.-Oct.) 1951

Artificial Radioactive Antigens: I. Preparation and Evaluation of S^{35}-Sulfanilic Acid-Azo-Bovine-γ-Globulin. J. S. Ingraham.—p. 109.
Id.: II. Metabolism of S^{35}-Sulfanilic Acid-Azo-Bovine-γ-Globulin in Normal and Immune Mice. J. S. Ingraham.—p. 117.
Effect of Splenectomy on Course of Plasmodium Berghei Infections in Microtus Guentheri. A. Zuckerman and M. Yoeli.—p. 130.
Role of Spleen in Hemolysin Production in Rabbits Receiving Multiple Antigen Injections. W. H. Taliaferro and L. G. Taliaferro.—p. 143.
Effect of Penicillin on Typhoid Antibody Production. S. Green, M. G. Wohl and S. O. Waife.—p. 169.
Granulosis of Omnivorous Looper, Sabulodes Caberata Guenee. K. M. Hughes and C. G. Thompson.—p. 173.
Staphylococcal Enterotoxin: Production Methods. M. J. Surgalla, J. L. Kadavy, M. S. Bergdoll and G. M. Dack.—p. 180.
Some Physiological Properties of Nonpathogenic Mycobacteria. F. M. Bozeman, R. N. Doetsch and J. E. Faber Jr.—p. 185.
Studies of Effect of Antibiotics on Infections with Mouse Pinworm, Aspicularis Tetraptera: I. Action of Terramycin Hydrochloride. H. S. Wells.—p. 190.
Prophylaxis of Experimental Diphtheria with Penicillin. J. P. Uscavage, M. Novak and W. I. Taylor.—p. 193.
Field Trial of Shigella Flexneri III Vaccine: VII. Studies on Asymptomatic Carriers of Organism. L. A. Barnes.—p. 199.

Journal of Nervous and Mental Disease, New York

114:189-282 (Sept.) 1951

*Use of General Semantics and Korzybskian Principles as Extensional Method of Group Psychotherapy in Traumatic Neuroses. D. M. Kelley. —p. 189.
Sensory Pattern in Radicular Sciatica. L. Halpern.—p. 221.
Use of Priscoline in Amyotrophic Lateral Sclerosis: Case Report. T. B. Van Itallie and S. Graves Jr.—p. 231.
Studies in Psychopathology: Data Concerning Adaptation to Isolated Situation of Combat Zone in the Southwest Pacific. H. S. Ripley and S. Wolf.—p. 234.

General Semantics in Group Psychotherapy.—Kelley describes the technique that was evolved and employed in treatment of more than 7,000 soldiers with traumatic neuroses in the European Theater during World War II. These patients required reassurance and explanation as to the causes of their breakdown and symptoms. At first individual therapy was used, but when the patient load increased, the group method was tried and informal lectures were interspersed with questions and discussions. The technique is based on Korzybski's methodology and represents a way to break up an acute conditioned reaction. Korzybski's principles of general semantics are much more basic than psychiatry or psychotherapy. The therapist must not only have a good grounding in general semantics but must have available a large number of practical examples which can be instantly directed at the question in hand. Korzybski's "Science and Sanity" and the more popular recent volumes of Lee and Johnson add valuable illustrations. The author presents the lecture material used as the introductory phase to each treatment session. The first aim of this therapy is to give the patient a simplified understanding of the psychophysiologic basis for his symptoms. Second, the development of group enthusiasm is important. In the group the individual finds that his symptoms are not very unusual but extremely common. As the individual attaches himself to the group, his individual egocentric patterns become lost in the group and consequently he becomes to some degree desensitized to them. A third advantage is the suggestibility that is developed through group relationships. Frequently a patient will voluntarily offer a "testimonial" as to his improvement. When this happens the therapist will note a general feeling of well-being permeating the entire group. Finally, the explanations permit the individual patient to substitute a reasonable physiologic explanation of his illness for his neurotic symptoms. The patient discovers that his "emotional" tensions are not necessarily abnormal manifestations, and he discovers that he must do something about the situation and cannot sit back and expect the therapist to wave a magic wand and produce a cure.

Journal of Neurophysiology, Springfield, Ill.

14:433-524 (Nov.) 1951

Cortical Representation of Visceral Afferents. V. E. Amassian.—p. 433.
Fiber Groups and Spinal Pathways of Cortically Represented Visceral Afferents. V. E. Amassian.—p. 445.
Ascending Conduction in Reticular Activating System, with Special Reference to Diencephalon. T. E. Starzl, C. W. Taylor and H. W. Magoun.—p. 461.
Collateral Afferent Excitation of Reticular Formation of Brain Stem. T. E. Starzl, C. W. Taylor and H. W. Magoun.—p. 479.
Radiation Path from Geniculate to Optic Cortex in Cat. G. H. Bishop and M. Clare.—p. 497.
Three Cerebral Cortical Systems Affecting Autonomic Function. P. D. Wall and G. D. Davis.—p. 507.

Journal of Pediatrics, St. Louis

39:397-518 (Oct.) 1951

*Clinical Evaluation of Corticotropin Therapy in Children. M. B. Kreidberg, A. P. Cleroux and I. N. Rosenberg.—p. 397.
*Mixed Adrenal Disease of Infancy. A. G. Knudson Jr.—p. 408.
Thumb-Sucking and Oral Structures: Serial Study from Birth to 14 Years of Age. J. H. Sillman.—p. 424.
Cat-Scratch Fever: Report of Three Cases. H. L. Lange.—p. 431.
Aureomycin Treatment of Pertussis: Results in 137 Patients. P. F. Wehrle, M. H. Lepper and H. N. Bundesen.—p. 435.
Treatment of Leucemia in Childhood. K. C. Mickle, G. V. Mus A. Lemanski and D. B. Caludon.—p. 442.
Tetanus Neonatorum: Report on Eight Cases with Two Recoveries. F. C Friedlander.—p. 448.
Infectious Lymphocytosis: Report of Two Cases Noted Following Trau S. Waldman and A. M. Frumin.—p. 455.
Studies in Sickle-Cell Anemia: II. Clinical Manifestations of Sickle Anemia in Children (Analysis of 37 Cases with Observation on of ACTH and Cortisone in Two Additional Cases). R. B. Scott, L. C. Banks, M. E. Jenkins and R. P. Crawford.—p. 460.
Hapamine in Treatment of Atopic Eczema. A. Nisenson.—p. 472.
Language Development in Group of Children with Spastic Hemiplegia S. Kastein and J. Hendin.—p. 476.
Use of Transparent Tape in Treatment of Umbilical Hernia in Infants G. E. Prince.—p. 481.

Corticotropin Therapy in Children.—Kreidberg and associates evaluate their experience with the use of corticotropin in 28 hos pitalized children with various diseases. Favorable results we obtained in bronchial asthma, nonthrombocytopenic purpur dermatitis venenata, rheumatic fever, Sydenham's chorea, rhe matoid arthritis, and the nephrotic state. The course of subac lymphatic leukemia was only temporarily modified. Benefic results were not obtained in glomerulonephritis, Wilson's d ease, polymyositis, and thrombocytopenic purpura. The ma untoward effects observed as a consequence of therapy with corticotropin were convulsions and hypertension. The authors conclude that corticotropin represents a valuable and relatively safe addition to the therapy of a number of serious diseases of children.

Mixed Adrenal Disease of Infancy.—In recent years more attention has been given to a syndrome of adrenocortical insufficiency, pseudohermaphroditism or sexual precocity, and adrenal hyperplasia. The disease is characterized by symptoms that appear in the first weeks of life, including persistent vomiting, visible peristaltic patterns, dehydration, acidosis, weight loss, and circulatory collapse with cyanosis, and, in the absence of appropriate therapy, death. The females are congenital pseudohermaphrodites. The males appear sexually normal during the first few months, but then signs of sexual precocity develop. Knudson presents the histories of 11 cases of mixed adrenal disease occurring in 8 families, which were observed at the Children's Hospital of Los Angeles. Any etiological explanation of mixed adrenal disease of infancy must account for (1) its occurrence in siblings, (2) its congenital nature, and (3) the presence of urogenital developmental anomalies in the female cases. The disease apparently develops in utero before the embryo is formed completely. There is some evidence that the disease is inherited recessively. Presumably the involved gene produces an error of adrenal steroid metabolism. The 17-ketosteroids are excreted in greatly increased amounts and the pattern of their composition is abnormal. This disease can be suspected if a young infant has persistent vomiting, cyanosis, and acidosis. Differentiation from pyloric stenosis is possible, because in pyloric stenosis vomiting produces diminished serum chloride, decreased urinary chloride excretion, and alkalosis, whereas in adrenal insufficiency, the chloride loss is renal in origin and is associated with acidosis. If adrenal insufficiency is suspected, it must be determined whether the cause is mixed adrenal disease, the temporary type of adrenal insufficiency described by Jaudon, or some rarer cause. The genitalia in the female infant offer an important clue, but may not be helpful in the male. However, the excessive urinary excretion of 17-ketosteroids in mixed adrenal disease provides the differential diagnosis. Parenteral saline and sodium lactate correct the electrolyte losses of mixed adrenal disease, while desoxycorticosterone acetate is the most effective drug for preventing renal electrolyte loss. Virilism in the female and precocity in the male have not been corrected so far.

Maine Medical Association Journal, Portland

42:301-326 (Oct.) 1951

Laboratory Considerations in Fluid and Electrolyte Balance. I. I. Goodof. —p. 301.
Medical Aspects of Fluid and Electrolyte Balance. W. B. Manter.—p. 302.
Hypokalemic Alkalosis. L. A. Asali.—p. 304.
Surgical Problems of Fluid and Electrolyte Balance. C. P. Lape.—p. 307.
Obstetric Helps. C. O. McCormick.—p. 309.

Medical Annals of District of Columbia, Washington

20:523-582 (Oct.) 1951

New Technics for Detection of Blood Group Antibodies. J. B. Ross and O. B. Hunter Jr.—p. 523.
*Presence of Basophilic Cells in Pituitary and Adrenal Glands in Hypertension. V. J. Dardin and D. Feriozi.—p. 527.
Gallinger Hospital Clinical Conferences: Hypersplenism. H. H. Hussey and P. C. Kiernan.—p. 530.
Surgical Treatment of Portal Hypertension.—p. 540.
Fibroids and Malignant Pseudomucinous Cyst: Report of Case. J. I. Melnick.—p. 547.

Pituitary and Adrenal Basophilic Cells in Hypertension.—At postmortem examination, especially if the patient had some toxic process, the adrenal medulla is usually found to be completely autolyzed. However, in patients with hypertension the medulla is almost always firm and intact, slightly thicker than normal, and of a light, greyish-white color. The zona reticularis of the cortex is usually congested, forming an area of demarcation between the cortex and the medulla. On microscopic examination the cells of the medulla appear to be slightly larger than normal. Often the cytoplasm is finely granular and stains a deep purple with ordinary hematoxylin and eosin, giving a definite basophilic appearance. It seemed advisable to investigate other internal secretory glands as a possible source of stimulation or for a correlative effect. The pituitary was suspected, since basophilic adenoma of Cushing's syndrome is associated with hypertension. For five years Dardin and Feriozi studied all pituitary and adrenal glands obtained at postmortem examination. It became apparent that basophilia of the anterior lobe of the pituitary, without evidence of adenomatous formation, is a predominant factor in hypertension, and is present in all cases in which cellular hypertrophy and basophilia of the adrenal medulla are found. It appears that both the adrenal medulla and the anterior lobe of the pituitary play a part in the production of the clinical syndrome known as essential hypertension.

Military Surgeon, Washington, D. C.

109:267-598 (Oct.) 1951. **Partial Index**

Sequence of Pathologic Changes in Swine Exposed to $LD_{100/30}$ of Total Body Super-Voltage X-Radiation. J. L. Tullis.—p. 271.
Progression of Morphologic Lesions in Swiss Mice Exposed to 625 r, 2000 KVP, Total Body X-Radiation. B. G. Lamson and J. L. Tullis.—p. 281.
Studies on Mechanism of Protective Action of Glutathione Against Whole Body Radiation. E. P. Cronkite, G. Brecher and W. H. Chapman. —p. 294.
Antisheep Agglutinins in Infectious Mononucleosis: Experimental Investigations. I. Davidsohn, K. Stern and C. Kashiwagi.—p. 308.
Malignant Tumors of Nonchromaffin Paraganglia. H. F. Smetana and W. F. Scott Jr.—p. 330.
Hematoidin Crystals in Reticulum Cell Sarcoma of Mouse and in Newborn Human Tissues. T. B. Dunn.—p. 350.
Signet-Ring Cell Carcinoma. O. Saphir.—p. 360.
Malignant Melanoma of Choroid and Ciliary Body: Study of 2,535 Cases. H. C. Wilder and E. V. Paul.—p. 370.
Squamous Cell Carcinoma of Lip: Critical Statistical and Morphological Analysis of 835 Cases. J. L. Bernier and M. L. Clark.—p. 379.
Squamous Cells in Human Thyroid. G. H. Klinck and K. F. Menk. —p. 406.
Postinflammatory "Tumors" of Pleura: Three Cases of Pleural Fibroma of Interlobar Fissure. W. J. Brown and L. C. Johnson.—p. 415.
Histopathologic Study of Acute Nonfatal Hepatitis. T. C. Keller, B. Giges and H. F. Smetana.—p. 425.
Liver Regeneration in Rats on Diets that Produce Cirrhosis. R. B. Williams Jr.—p. 435.
*Pathology of Regional Enteritis. H. Rappaport, F. H. Burgoyne and H. F. Smetana.—p. 463.
Birefringent and Sudanophilic Lipoids in Adrenal Cortex in Disease and Sudden Death. W. W. Ayres, H. I. Firminger and P. K. Hamilton. —p. 503.
Nephrosis Following Experimental Local Cold Injury. R. B. Lewis and R. M. Thompson.—p. 518.
Synovial Membrane Changes in Disseminated Lupus Erythematosus: Observations of Two Autopsied Cases. G. A. Bennett and F. D. Dällenbach.—p. 531.
*Chemical (Beryllium) Granulomas of Skin. E. B. Helwig.—p. 540.

Regional Enteritis.—Numerous terms such as regional enteritis, cicatrizing enteritis, segmental enteritis, region ileocolitis, and others designate the circumscribed or segmental involvement of a portion of the intestinal tract by a granulomatous or cicatrizing chronic inflammatory process. This is a histological study of 100 such cases from the files of the Armed Forces Institute of Pathology in which the small intestine was involved alone or in conjunction with the colon. Although no single histological lesion was found to be disease-specific, combinations of certain histopathologic features were sufficiently characteristic to furnish a basis for diagnosis. The fundamental process is a productive inflammatory reaction, in which all tissue elements appear to take part. A tubercle-like nodular granuloma was observed in almost one-half of the cases. These granulomas develop in preexisting hyperplastic lymphoid tissue or in ectopic lymph follicles and frequently are observed in or underneath intact mucosa. The cause of lymphedema and lymphangiectases has not been clearly established, but in 12% of cases, intralymphatic granulomas were obstructing the lymph vessels. The evidence suggests that ulcer formation is not the primary lesion in regional enteritis, but is preceded by lymphoid hyperplasia, formation of nodular granulomas, and submucosal edema. It is believed that all three changes predispose the formation of ulcers, particularly in the terminal ileum where the fecal current is subject to retardation and intermittent stagnation. Although the nodular granuloma of regional enteritis resembles the tubercle of sarcoidosis there is evidence that regional enteritis is not a localized form of sarcoidosis. Certain histological features seem to suggest that a local hypersensitivity reaction to recurrent antigenic stimuli may be a factor in the etiology of enteritis.

Beryllium Granulomas of Skin.—Ten examples of chemical (beryllium) granuloma of the skin are reported. Nine lesions occurred in patients following accidental injury by broken fluorescent lamps and one in a worker injured by a cold cathode tube of a neon sign. The tissue response to injury by beryllium-containing fluorescent lamps is a biphasic reaction characterized by granulomas composed of epitheloid cells and by necrobiosis composed of acidophilic anuclear tissue. Although either of these two changes may occur singly in a variety of granulomas, the presence of both is strong presumptive evidence of chemical granuloma. The pattern of distribution of granulomas and necrobiotic foci in the tissue suggests that the latter occur secondarily. Necrobiosis is usually seen at the base of dermal ulcers and is probably the cause of ulceration. Clinically the lesions are characterized by slow healing and a tendency toward breakdown of the scar with discharge of a semisolid material that probably originates from the foci of necrobiosis. The prognosis of chemical granuloma is poor unless all the affected tissue is excised. The pathogenesis of chemical granulomas has not been established but evidence indicates that elements other than beryllium must also be present.

New England Journal of Medicine, Boston

245:549-590 (Oct. 11) 1951

- *Clinical Studies on Activity of Orally Administered Cortisone. G. W. Thorn, A. E. Renold, D. L. Wilson and others.—p. 549.
- Early Diagnosis and Treatment of Cancer of Lung. R. H. Overholt and F. M. Woods.—p. 555.
- Health Survey of Workers in Garment Industry as Part of Preventive Medicine Program. J. H. Kaplan, N. N. Bennett and G. Foley.—p. 560.
- Traumatic Separation of Lower-Femoral Epiphysis. P. H. Leavitt.—p. 565.
- Diabetes Control: Detection, Public Education and Community Aspects. H. Blotner and A. Marble.—p. 567.

Orally Administered Cortisone.—Comparative studies of the physiological and clinical effects of cortisone administered by different routes were carried out in normal persons, patients with Addison's disease, and in patients with a variety of other diseases such as chronic glomerulonephritis associated with gouty arthritis, chronic psoriasis, and chronic rheumatoid arthritis associated with Boeck's sarcoid. Cortisone acetate was given in single doses of 25, 50, and 100 mg., either by mouth or by intramuscular or intravenous injection. Compounds E and F were administered orally in doses of 25 mg. for three consecutive days, varying the order of administration in random fashion. Results showed that the eosinophil response following oral administration of cortisone is more rapid and more pronounced than that following intramuscular injection and closely approximates the effect of intravenous administration. Consequently, the degree of eosinophil response serves as a more sensitive indicator of effective dosage with orally given cortisone than has been generally observed with intramuscularly administered cortisone. The eosinopenic effect of orally given cortisone acetate was inferior to that of compound F, both as the acetate and in free form. The electrolyte and metabolic effects of orally given cortisone followed the same pattern as with intramuscular administration. In most cases the clinical effectiveness of oral ingestion of cortisone at six-hour intervals appeared to equal that of intramuscular injection once a day. The total daily dose required for control of a variety of diseases appeared to be about the same. The rapidity of action of the orally taken drug makes this route of administration the method of choice in acute diseases requiring immediate high levels of circulating adrenal hormone. The effectiveness of orally administered cortisone enhances the potential dangers of its indiscriminate use. A mild psychosis was observed in a patient who had received 300 mg. of cortisone daily for nine days; all symptoms promptly disappeared when the drug was discontinued. Flatulence occurred occasionally, and insomnia appeared, particularly when the drug was given in the evening. As with intramuscularly given cortisone, significant alterations in water and electrolyte balance can almost always be prevented by routine restriction of sodium chloride intake and prophylactic oral administration of potassium chloride.

New York State Journal of Medicine, New York

51:2183-2294 (Oct. 1) 1951

- Problem of Burns in Atomic Warfare. H. E. Hilleboe.—p. 2219.
- Thermal Burns from Atomic Explosion. J. H. Morton and H. D Kingsley.—p. 2221.
- Surgical Treatment of Burns. T. W. Stevenson.—p. 2223.
- *Management of Neuroses in Industrial Medicine. S. Feigin.—p. 2225.
- Cerebral Concussion and Its After-Effects: Problems of Differential Diagnosis. G. H. Hyslop.—p. 2231.
- *Relationship of Brain Injury to Brain Tumors and Other Nontraumatic Diseases of Nervous System. I. S. Wechsler and I. S. Freiman —p. 2237.
- Sympathectomy in Peripheral Vascular Disease. H. L. Skinner and E. F. Parsons.—p. 2241.
- Accessory Breast Tissue in Axilla. T. De Cholnoky.—p. 2245.
- Orthostatic Hypotension in Diabetes Mellitus: Evolution of Vascular Damage on High Salt Therapy. L. M. Levitt and M. B. Handelsman. —p. 2249.
- Lipotropic Substances for Absorption of Vitreous Opacities. H. Eggers —p. 2255.
- Effect of Insulin and Glucose in Chronic Lymphatic Leukemia. L. Gitman, E. A. Levine, D. H. Appelman and M. Jacobi.—p. 2257.

Neuroses in Industrial Medicine.—The role of psychodynamics in the etiology of the neuroses and the importance of psychologic treatment has gained acceptance in the practice of industrial medicine only to a limited degree. Perhaps the main cause is that the patient in industrial medicine is usually handled in a clinic atmosphere, and there is little time for the individual consideration that is so important in the handling of neurotic patients. Many of the neuroses in industrial practice are fostered by the uncritical treatment that is usually instituted for physical complaints. When the patient complains too much or when the insurance carrier or compensation authorities demand progress reports, x-ray examinations and other laboratory work are performed and other therapy is changed, but the original diagnosis is not doubted until everybody's patience is worn out. The industrial physician can help in managing the neuroses by changing his therapeutic approach when progress is halted in any patient. The author suggests psychodynamic factors be considered early in relation to subjective symptoms. A brief survey of the life experiences and the life situation of the individual should be included in the initial physical examinations. Any lack of objective physical findings, disability out of proportion to the findings, or imperviousness to physical and medicinal therapy should be recognized early and the psychotherapy instituted immediately.

Relationship of Brain Injuries to Brain Tumors.—There are widely divergent opinions on the relationship of trauma to diseases of the nervous system that are commonly regarded as nontraumatic. Wechsler and Freiman believe that the following criteria should be considered in relating trauma to diseases of the nervous system: 1. The trauma must be sufficiently severe actually to injure the nervous system. 2. The subsequent development of signs and symptoms must be related to the site of the injury. 3. The individual must have been well before the receipt of the blow and the onset of the illness. 4. The interval between the receipt of the blow and the onset of the nontraumatic disease must be neither too short nor too long. 5. The interval must be punctuated by some signs or symptoms. Guided by these criteria, the authors studied three groups of cases: tumors of the brain, multiple sclerosis, and amyotrophic lateral sclerosis. They found that in general the evidence presented to show that trauma is a cause of these three conditions is not convincing. In a few cases the time relationship and site of injury are such that the possibility cannot be excluded entirely. They make the following conclusions: 1. Trauma can play a role in the evolution of meningioma of the brain. In their series the incidence was 3.7%. 2. There is no convincing evidence that trauma can cause glioma, but injury to the head may cause a hemorrhage into the tumor or otherwise aggravate its course. 3. Trauma does not cause primary or "typical" multiple sclerosis but may precipitate the onset or aggravate the course of the illness. 4. Trauma is not the cause of primary amyotrophic lateral sclerosis, but it may be a factor in symptomatic syndromes associated with vascular disease, infection, secondary myelopathy, or herniated disk.

Plastic & Reconstructive Surgery, Baltimore

8:263-334 (Oct.) 1951

Emergency Treatment of Mass Casualties: Some Comments on Training of Medical Personnel. J. W. Maliniac.—p. 265.
The Urgency for Medical Defense. A. W. Wallander.—p. 267.
Treatment of Thermal Burns Following an Atomic Bomb, Air Burst Explosion. W. S. Stone.—p. 269.
Prevention and Treatment of Burn Shock. R. Shapiro.—p. 272.
Emergency Tracheotomy in Post-Traumatic Respiratory Obstruction. S. F. Kelley.—p. 275.
Immediate Care of Catastrophic Head Injuries. A. Kaplan.—p. 278.
Immediate Care of Eye Injuries. W. L. Hughes.—p. 281.
Interruption of Skin Autosensitivity with ACTH—Adrenocorticotropic Hormone. B. F. Edwards, N. J. Wilde, K. L. Pickrell and F. L. Engel.—p. 288.
Early Skin Coverage in Burn Therapy. L. R. Rubin.—p. 297.
*Clot Fixation in Open Method of Free Skin Grafting. J. A. Jenney. —p. 299.
Treatment of Multiple Fractures of Facial Bones. R. H. Walden.—p. 307.
Fractures of Jaws and Facial Bones. F. S. Dunn.—p. 310.
Observations on Development of Circulation in Skin Grafts: II. Physiologic Pattern of Early Circulation in Auto-Grafts. H. Conway, R. B. Stark and D. Joslin.—p. 312.
Deformity of Nasal Dorsum Through Loss of Substance: Correction by Bone Grafting. R. Farina.—p. 320.

Clot Fixation in Open Free Skin Grafting.—Jenney classifies the methods of free skin grafting as the open method when no bandages are used, the closed method when bandages are used, and the intermediate method when no bandages are used but wax or plaster is poured directly over the grafts for immobilization and protection. In the open method a few cubic centimeters of blood are withdrawn from a vein and lightly sprinkled over the recipient area to form the thin layer of clot or glue that will hold the grafts to the body without the aid of bandages. A clotting agent is sprinkled over the raw surface of the graft and the graft is placed over the recipient area. The grafts are patted with a moistened sponge, or lightly massaged, to "fix" the grafts to the recipient area. These maneuvers are made from the center of the grafts outward to force out any free fluids, which are picked up along the borders of the grafts with a moistened sponge. The author regards the following factors as fundamental in all free skin grafting: the skin itself, infection, tissue fluid, secondary tissue, and protection. Epidermis has no direct blood supply but lives on tissue fluid. Clot from blood and plasma is "body glue," and is depended on to cause adherence of the graft to the body. Secondary tissue, that is, granulation and scar tissue, substitutes for normal tissue. Ideally it is discarded, but practically this is not always advisable. Bandages serve only to fit the grafts to the recipient area in order that the clot can carry on its physical and physiological functions. Success in free skin grafting by the open method proves that bandages are not necessary for control of edema. Any smooth area in an adult that is not subject to trauma, twisting, or wrinkling can be free skin grafted without bandages. Protection might be furnished by a cradle, suspension of the part, a light protective shield, or light fluff padding over the area.

Psychosomatic Medicine, New York

13:273-334 (Sept.-Oct.) 1951

*So-Called Psychogenic Influences in Essential Hypertension. C. Binger. —p. 273.
Electrocardiographic Abnormalities Associated with Emotional Disturbances: Case Report. R. H. Crede, N. C. Chivers and A. P. Shapiro. —p. 277.
Variations in Clotting Time, Relative Viscosity, and Other Physiochemical Properties of Blood Accompanying Physical and Emotional Stress in Normotensive and Hypertensive Subject. R. A. Schneider and V. M. Zangari.—p. 289.
Personality and Heart Disease. C. T. Storment.—p. 304.
Psychosomatic Disorders in Psychoses. J. Swartz and E. V. Semrad. —p. 314.

Psychogenic Influences in Essential Hypertension.—Binger reviews the persent knowledge of psychogenic influences in essential hypertension. He feels that no final statement can be made until more is known of the constitutional, physiological, and pathological elements in this group of diseases. At present no proof is at hand that the commonly observed disturbances of personality are more than frequently occurring associated phenomena. The fact that acute emotional excitement may result in transitory elevations of blood pressure does not necessarily prove that long-lasting emotional states or situations of conflict can precipitate chronic vasomotor constriction. The statistical and experimental approach to this problem is discussed, but the author feels that in spite of the lack of final proof for psychogenesis, there is evidence for believing that psychotherapy offers some patients with essential hypertension the best chance of help.

Review of Gastroenterology, New York

18:693-760 (Oct.) 1951

Surgical Treatment of Cancer of Pancreas. A. Brunschwig.—p. 705.
Simple Tests of Value in Diagnosis and Treatment of Pancreatic Disease. T. H. McGavack.—p. 711.
Carcinoma of Pancreas: Diagnosis and Treatment. W. B Parsons. —p. 715.
Surgical Management of Duodenal Ulcer. R. Colp.—p. 724.
When Should Gastroscopy Be Employed? H. Barowsky.—p. 733.
Deceptive Aspects of History-Taking—Illustrative Cases. M. Golob. —p. 739.

U. S. Armed Forces Med. J., Washington, D. C.

2:1423-1592 (Oct.) 1951. **Partial Index**

*Streptokinase and Streptodornase in Treatment of Pilonidal Cysts. J. M. Miller, M. Ginsberg, R. J. Lipin and P. H. Long.—p. 1423.
Thoracic Injuries in World War II: III. Surgical Treatment of Traumatic Lesions of Intrathoracic Cardiovascular Structures. H. D. Adams. —p. 1431.
Notes on Field Surgery. S. H. Neel Jr.—p. 1439.
Biliary Regurgitation During Cholangiography. S. A. Kaufman.—p. 1443.
Orthopedic Concepts in Management of Rheumatoid Arthritis. J. W. Batch.—p. 1447.
Preoperative Diagnosis of Meckel's Diverticulum. G. Alvary.—p. 1459.
Combat Exhaustion. A. J. Glass.—p. 1471.
Effect of Confinement on Psychiatric Patients. J. R. Cavanagh.—p. 1479.
Malayan Filariasis: Incidence and Distribution in Southern Korea. Takashi Senoo and D. R. Lincicome.—p. 1483.
Treatment of Paroxysmal Ventricular Tachycardia with Pronestyl. C. I. Hamilton Jr. and F. W. Wilson.—p. 1491.
Surgical Considerations in Sudden Cardiac Arrest. C. K. Holloway Jr. —p. 1497.
Adie's Syndrome. N. Yourish.—p. 1515.
Sectional Leg Splint. B. G. Clarke.—p. 1519.
Early Recognition of Peripheral Nerve Injuries. A. F. Mastellone, R. C. Psaki and J. H. Kuitert.—p. 1523.
Field Hospital Neuropsychiatric Service. H. Kolansky and R. K. Cole. —p. 1539.
Herpes Zoster Following German Measles. P. E. Wright, E. G. Pear and W. L. Semler.—p. 1563.
Violent or Clinically Unexplained Deaths. W. F. Enos Jr. and J. L. Hansen.—p. 1569.
Repair of Flexor Pollicis Longus Tendon. F. H. McCullough Jr.—p. 1579.

Streptokinase and Streptodornase in Treatment of Pilonidal Cysts.—Grossly infected pilonidal cysts or those associated with abscess are difficult to treat because the duration of such treatment is usually lengthy. Streptokinase and streptodornase afford the surgeon a new method of preparing infected wounds for curative operation. Air vent suction with catheters further facilitates healing. Streptokinase and streptodornase may be introduced into the wound postoperatively by the catheters to remove the products of digestion of fibrin and desoxyribose nucleoprotein. Sixteen patients with abscessed pilonidal cyst were treated by incision, drainage, and the topical application of streptokinase and streptodornase in preparation for excision. Catheters were not used in treatment of the patients treated early in this series but are now inserted routinely. Primary healing was achieved in 11 of the 16 patients. The average time spent in the hospital was 33.7 days, which can be decreased by routine use of catheters in the wound at the time of the curative operation. A comparable series of 17 patients with infected pilonidal cysts that required incision and drainage before excision in the period before streptokinase and streptodornase were available for use was analyzed. The average time spent in the hospital was about 46 days. Thus an average of 12.3 days of hospitalization was saved in the patients treated with streptokinase and streptodornase. These periods of hospitalization applied to military personnel, who must be able to return to full duty status. In civilian hospitals, where patients may be released earlier to convalesce in their homes, hospitalization need not be so prolonged.

FOREIGN

Acta Haematologica, Basel

6:193-256 (Oct.) 1951. **Partial Index**

Peculiar Familial Hemolytic Anemia in the Tropics: Its Differential Diagnosis from Thalassemia (Mediterranean Anemia). E. Stransky.—p. 193.
Functional Behavior of Isolated Structural Elements of Thrombocytes: Hyalomere and Chromomere. A. Fonio.—p. 207.
Effect of Penicillin on Experimentally Induced Leukopenia and Agranulocytosis. G. Rosenow.—p. 213.
Clot Retraction as Quantitative Test of Function and Agglutinability of Blood Platelets. E. Øllgaard.—p. 220.
Influence of Arterenol on Morphology of Venous and Capillary Blood. V. De Fazio and F. Marsico.—p. 231.
*Destruction of Fetal Erythrocytes. W. Künzer.—p. 237.

Destruction of Fetal Erythrocytes.—During the first few weeks of life destruction of erythrocytes is greater than in other periods of life. Studies by Heubner and collaborators suggested that the reducing enzyme systems protect the hemoglobin in the erythrocytes against oxidation and thus rapid destruction. Künzer made repeated determinations of the oxyhemoglobin content of young infants. It was found that the oxyhemoglobin portion of the total blood pigment is definitely increased during the first few weeks of life. This is regarded as a manifestation of diminished activity of the reducing enzyme systems within the erythrocytes that carry fetal hemoglobin.

Beiträge zur klinischen Chirurgie, Munich

183:129-256 (No. 2) 1951. **Partial Index**

*Chronic Lymphatic Gastritis (Konjetzny): Clinical Significance and Relation to Brill-Symmers Disease. H. Prinz.—p. 129.
Hemicolectomy in Treatment of Chronic Constipation, H. Uiberreither.—p. 166.
*Primary Sarcomas of Stomach: Clinical Aspects and Prognosis. P. C. Alnor.—p. 179.
Diverticulum of Stomach and Duodenum. M. A. Schmid.—p. 193.
Open Injuries of the Knee Joint: Treatment and Results. F. Betzel.—p. 226.

Chronic Lymphatic Gastritis and Brill-Symmers Disease.—On the basis of four case reports Prinz describes a form of chronic gastritis that is characterized by ulceration and swelling of the mucosa and hypertrophy of all layers of the gastric wall. The clinical and roentgenologic findings resemble those of cancer. Microscopically there is a lymphocytic infiltration with follicle formation, which was described by Konjetzny as chronic lymphatic gastritis. An extensive erosion with irregular serpiginous margins, regarded as typical of superficial mucosal cancer or erosive carcinoma, was observed in one case; and in another case cancerous degeneration actually occurred. The author discusses this chronic lymphatic gastritis in relation to true neoplasia and particularly to giant follicular lymphoma, known as Brill-Symmers disease. He believes that Brill-Symmers disease is not a newly discovered, distinct disease entity, but is a collective term for conditions occasionally seen at necropsy, including the condition designated by Konjetzny in 1921 as aleukemic lymphomatosis of the stomach. Microscopically the essential finding is a giant follicular lymphoma, and Konjetzny spoke of tumor-like primary proliferation of the lymphadenoid tissue. Prinz believes that the Brill-Symmers disease in its beginning phase is limited to the stomach.

Primary Sarcomas of Stomach.—Most statistical reports indicate that primary sarcomas of the stomach account for less than 2% of all stomach neoplasms. Six cases seen in 15 years at the Surgical Clinic of the University of Kiel are reported on. In all of these cases laparotomy was done without a previous diagnosis of sarcoma; either some unspecified malignant tumor, a polyp, or a carcinoma had been suspected. The definite diagnosis was made on the basis of the operative and histologic findings. Other observers also found that clinically differentiation of gastric sarcoma and carcinoma is usually impossible. Large gastric sarcomas may remain unrecognized, because they produce almost no symptoms. They seem to occur most frequently in the sixth decade of life, but one of the six patients described was only 20 years old. Four of the six cases were in women, and other statistics indicate an even greater predominance of women. Although complications, particularly hemorrhages, are relatively frequent with gastric sarcoma, metastases occur more rarely than with carcinoma. The same principles of treatment apply to sarcoma as to carcinoma, except that a wedge excision may be adequate for removal of pedicled tumors. Following operation three of the author's six cases survived for 7, 15, and 18 years, respectively. The prognosis could not be evaluated in the other three cases because they were atypical. One patient had carcinosarcoma, another had scirrhous carcinoma of the pylorus in addition to myosarcoma, and a third had refused operation for years until the growing tumor produced obstruction. Alnor feels that, on the basis of Konjetzny's classification of primary gastric sarcomas, tumors of groups one and two have a favorable prognosis while those in group three have the same prognosis as carcinoma.

British Journal of Tuberculosis, London

45:153-200 (Oct.) 1951

*Tuberculous Meningitis: Some Experiences Based on Treatment of 140 Cases W. L. Calnan.—p. 153.
*Friedländer Pneumonia: Report of Eight Cases Treated by Chemo-Therapy. A. G. Ogilvie.—p. 165.
Results of Sanatorium Treatment of Cases of Pulmonary Tuberculosis Discovered by Mass Radiography. H. S. Fraser.—p. 172.
Upper Lobe Bronchiectasis. A. W. Lees.—p. 177.
Bronchography with Suspension of Sulphanilamide in Iodised Oil. H. G. H. Houghton and J. H. R. Ramsay.—p. 182.
Pneumoconiosis in Steel Workers. J. Aspin and A. F. Shirras.—p. 185.
Multiple Pathology in Case of Pulmonary Tuberculosis. J. H. P. Johnson—p. 188.

Tuberculous Meningitis.—During the treatment of 140 patients, mostly children, with tuberculous meningitis, Calnan made the following observations: The incidence is increased from February to April. Early diagnosis can be made less difficult by bearing the possibility of occurrence in mind during this season, making a tuberculin test early, and following this up with chest roentgenograms and a lumbar puncture if symptoms persist. It is inadvisable to delay treatment until tubercle bacilli have been isolated from the cerebrospinal fluid. Treatment can be started at once in a child with characteristic clinical signs and cerebrospinal fluid changes. The association of lymphocytosis with low sugar content of the fluid is found only with this disease, a few cases of neurovascular syphilis, epidural abscess, and torulosis of the nervous system. Once the decision to give streptomycin treatment has been made, both the intramuscular and intrathecal routes must be used. Calnan outlines four plans of treatment and describes the results in 114 patients, who were observed for at least 12 months. Of 34 under 3 years of age, 25 died, and of 80 over 3 years of age, 36 died. The nursing care of these children is difficult. Some of them lie in bed in an apathetic state for months. Daily lumbar punctures, urinary incontinence, the possible development of pressure sores, and often spoon and tube feeding impose a heavy burden on the nursing staff. When streptomycin treatment is completed and the cerebrospinal fluid is normal or almost normal, further supervision is still necessary. These children should remain in a sanatorium during convalescence. Pulmonary and other extra-meningeal manifestations of tuberculosis may require treatment. Lumbar punctures should be made at regular intervals for at least a year to detect a relapse early. At present it is impossible to say any child with tuberculous meningitis has been "cured."

Friedländer's Pneumonia.—Friedländer's pneumobacillus was found in 31 of 140 cases of pneumonia admitted to a medical clinic during a three year period. In only eight of these was a diagnosis of Friedländer's pneumonia made, however, because in only eight did the pneumobacillus predominate over other organisms in the sputum. The 5.7% incidence of Friedländer's pneumonia in this series of 140 patients is unusually high and is distorted by the fact that all eight cases occurred in a single year. The 23 patients with mixed bacterial flora responded promptly to penicillin therapy, but only one of the patients with true Friedländer's pneumonia responded to this drug. Five others were cured by streptomycin after penicillin treatment had failed. The remaining two patients died unexpectedly after several days of well-being and normal temperature following streptomycin therapy. In one of the fatal cases a lung abscess was found at autopsy in the upper lobe of the right lung, and in the other, an abscess in the lower lobe of the right lung was suspected clinically. No other lung abscess was diagnosed clinically or radiologically. The disease was confined to the lower lobes in six of the eight cases, although multilobar infection occurred in five. The leukocyte count was high in four cases, but in two of these evidence of suppuration was present. It is suggested that sulfonamide treatment given by the family doctor to three of the eight patients may have slowed, or temporarily checked, the progress of the disease, thus accounting for the fact that these patients were less seriously ill than those described in the literature.

Canadian Medical Association Journal, Montreal

65:295-408 (Oct.) 1951

Course of Subacute Combined Degeneration of Spinal Cord. H. H. Hyland, G. O. Watts and R. F. Farquharson.—p. 295.
*Hexamethonium Compounds in Treatment of Hypertension. C. W. Fullerton and I. G. Milne.—p. 302.
*Surgical Treatment of Mitral Stenosis. G. Murray.—p. 307.
Treatment of Peptic Ulcer in General Practice. J. Bingham.—p. 312.
Simpler Methods for Average Laboratory. G. Nadeau.—p. 318.
Some Psychosomatic Aspects of Injuries. D. Cappon.—p. 321.
Blood Alcohol Levels in Relation to Driving. H. W. Smith and R. E. Popham.—p. 325.
Diabetes Mellitus and Pregnancy. H. I. Cramer.—p. 328.
Studies on Pathogenesis of Diabetes. F. D. W. Lukens.—p. 334.
Fibrositic Headache. S. J. Shane.—p. 339.
Infantile Spinal Progressive Muscular Atrophy in Twins. R. Poirier, R. C. B. Corbet and A. E. Buckwold.—p. 342.
Amputation for Ischaemic Arterial Disease of Leg. J. C. Luke.—p. 343.
Diagnosis and Treatment of Recent and Neglected Nasal Fractures. M. S. Miller.—p. 348.
Effectiveness of Modern Treatment for Gonorrhoea in Women. C. L. Hunt.—p. 351.
Adrenal Insufficiency in Childhood. M. Mullinger and A. L. Chute. —p. 353.
Scalenus Minimus Muscle. F. L. Lawson and K. G. McKenzie.—p. 358.
Prolonged Euphoria with Cortisone. D. Robinson.—p. 361.
Late Follow-Up of Thoracoplasties. J. Ryder, L. M. Mullen and H. H. Stephens.—p. 362.
Studies on Excretion of Cortisone and Compound F Using Porter-Silber Method. K. K. Carroll, H. T. McAlpine and R. L. Noble.—p. 363.
Treatment of Varicose Veins. L. B. Fratkin and H. L. Jackes.—p. 367.

Hexamethonium Compounds in Hypertension.—Thirty-one hypertensive patients were hospitalized and treated with hexamethonium. Blood pressure readings were taken every four hours for from several days to several weeks prior to the administration of the drug. For almost all patients administration of hexamethonium bromide was started by mouth, a 250 mg. tablet being crushed and given before a meal as a test dose. The following day a 250 mg. tablet was given four times and on subsequent days the dose was rapidly increased to 3 gm. daily. During treatment blood pressure readings were taken from 4 to 12 times daily with the patient in the supine, sitting, and standing postures. One group of six patients had severe hypertension with impairment of renal function. Four of them had severe hypertensive encephalopathic attacks and two were almost moribund with dyspnea and myocardial failure. The latter two were given an average dose of 15 mg. of hexamethonium by intramuscular injection. Their blood pressure dropped to normal and within a few hours their dyspnea disappeared. The other four patients were given small doses of hexamethonium by mouth, and all had a satisfactory drop in blood pressure without interference with renal function. All were relieved of their headaches and felt better. The lives of these patients were indoubtedly prolonged. In a second group of six patients the blood pressure remained high despite hospitalization, bed rest, and sedation; they were extremely active, tense, and hard-driving. For these patients hexamethonium bromide by mouth in maximum dosages of 3 gm. daily produced no significant drop in blood pressure. Three of them were then given hexamethonium bromide intramuscularly in daily doses of 300 to 400 mg., but the resulting falls in blood pressure never lasted more than one hour. In this group psychogenic factors seemed to influence the course of the disease. A third group of 19 patients who were cooperative and relaxed all showed a fall in blood pressure soon after hospital admission, although they were not confined to bed. These patients were given hexamethonium bromide or bitartrate by mouth for periods up to five months. The immediate effect was difficult to evaluate because of the great fluctuations in pressure. Generalized malaise occurred in five of the patients and coronary and cerebral thrombosis in one each. Whether these undesirable effects resulted from the treatment cannot be stated, but they are a warning that hexamethonium compounds should be administered only when the patient is under observation.

Surgical Treatment of Mitral Stenosis.—Murray suggests that for the present at least most patients with mitral stenosis should be treated medically. Surgery is indicated only if (a) life will probably be shortened by the disease, and surgery may prolong it; (b) the disability is great and may be reduced by operation; (c) complications may be prevented or diminished by an operation. It has been Murray's policy to operate only on patients who have the following unequivocal signs of mitral stenosis: only the mitral valve is involved or others to a slight degree; no active heart infection is present; the rheumatic fever is in a quiescent stage; and there is progressive failure and increasing disability in spite of medical treatment. Other factors in deciding the advisability of surgical treatment are (1) whether there is a massive thrombus in the left auricle; (2) whether permanent vascular changes in the pulmonary vascular tree that usually become manifest in pulmonary hypertension are present. Discussing the surgical technique, the author mentions relieving pulmonary hypertension by producing interatrial septal defects, as suggested by Blalock and Bailey, and the anastomosis of the pulmonary to azygous vein, as suggested by Sweet. Other possible surgical procedures are (1) division of the valve (commissurotomy); (2) resection of a portion of the stenosed valve; (3) resection of a portion of the valve and replacement by a new valve; (4) short-circuiting of the stenosed mitral area by various methods. The author usually divides the valves. After further comment on his own surgical technique, the author says that the hospital mortality has been about 20% in the 37 patients he has operated on. Fairly good results were obtained in 55% in that they were able to do some work. The other 25% had temporary improvement, but relapse occurred after from four to six months, and many then died. While there is great enthusiasm at present for surgical treatment of this disease, the author feels that selection of cases is still difficult but of the greatest importance.

Geburtshilfe und Frauenheilkunde, Stuttgart

11:867-962 (Oct.) 1951. **Partial Index**

Beta Rays of Radium for Treatment of Menopausal Hemorrhages. H. Czech.—p. 867.
Uterine Cancer and Pregnancy. H. Hartl.—p. 883.
Comparison of Stained or Vital Preparations in Cytodiagnosis. G. L. Wied.—p. 897.
Cytology of Peritoneal Fluid. W. Heyde.—p. 910.
Practical Experiences with the Papanicolaou Method in the Early Diagnosis of Genital Cancer. G. Winter.—p. 916.
*Treatment of Genital Hypoplasia with Intrauterine Administration of Suspension of Crystalline Cyren B. V. Friedberg.—p. 923.
Supravaginal Extirpation of Uterus in Treatment of Myoma. K. Richter. —p. 930.
Importance of Quantitative Assay of Hormones with Aid of Water Frog for Prognosis of Disturbed Pregnancy: Results of Graded Frog Test (Diluted and Concentrated Urine). H. Hartleb.—p. 938.
*Procaine Hydrochloride ("novocain") Infiltration of Inferior Cervical Ganglion in Hyperemesis Gravidarum. R. Stewens.—p. 943.
Rare Birth Injury in Mother in Pelvic Presentation of Fetus. P. Schwarz. —p. 952.

Treatment of Genital Hypoplasia.—Friedberg differentiates two types of hypoplasia of the uterus, the infantile uterus and the hypoplastic uterus, but admits there are transitional forms between the two. The most characteristic sign of the infantile uterus is the comparatively large size of the cervix in relation to the corpus, the normal 3:4 ratio being reversed to a 4:3 ratio. The organ may be almost of normal length but is very slender. The growth of the uterus has been arrested at an infantile stage and usually there are other signs of infantilism, such as trough-shaped perineum and absence of the posterior vaginal vault. The growth of the ovaries may be inhibited. Hypoplasia of the uterus, in contradistinction to infantilism, usually involves only the uterus, the total length being reduced, but the proportion between the cervix and corpus normal. Furthermore, the growth disturbance is limited to the uterus and is probably due to hormonal factors. This uterus is more like the postclimacteric uterus and is found in cases of secondary hypoplasia. Of 81 cases of genital-hypoplasia collected by the author over a period of five years, 62 had the infantile form and 19 had the hypoplastic form. All patients were over 20 years of age and complained of menstrual disturbances or sterility. In some of these cases the author tried local hormone therapy with crystalline diethylstilbestrol dipropionate ("cyren B"). He injected 1 cc. of a suspension containing 2.5 mg. per cubic centimeter into each side of the cervix to a depth of 1 cm. These hormone deposits were active for about three or four weeks and produced a much greater growth stimulus on the uterus than the customary form of hormone therapy. The author was able to corroborate this by probe measurement in 12 cases.

Infiltration of Inferior Cervical Ganglion in Hyperemesis Gravidarum.—Stewens blocked the inferior cervical ganglion by injection of procaine hydrochloride in 15 women with a severe form of hyperemesis gravidarum. The vomiting had persisted for several weeks and had not responded to customary treatments. In one patient it was impossible to infiltrate the ganglion properly because of a large goiter. The author describes two anterior approaches for blockage of the inferior cervical ganglion. He admits that blockage of this ganglion or the stellate ganglion has been known to cause serious complications, and mentions possible results. He believes, however, that there is little danger when the injection is made after palpation of the transverse process of the seventh cervical vertebra or of the head of the first rib. At his hospital only one mild complication resulted in one of 75 blockages of the inferior cervical or stellate ganglions. In 12 of the 14 women with hyperemesis gravidarum in whom blockage of the lower cervical ganglion succeeded, vomiting stopped promptly, but in two of the patients the treatment failed. In seven patients the effect was permanent, no further treatment being necessary; in the remaining five vomiting recurred, but the recurrence was usually either mild or temporary.

Journal of Mental Science, London

97:635-874 (Oct.) 1951. Partial Index

*Glutamic Acid and Its Salts in Petit Mal Epilepsy. D. A. Pond and M. H. Pond.—p. 663.
Evaluation of Rorschach Test as Prognostic Aid in Treatment of Schizophrenia by Insulin Coma Therapy, Electronarcosis, Electroconvulsive Therapy and Leucotomy. W. L. Rees and A. M. Jones.—p. 681.
Quantitative Evaluation of Psycho-Social Phenomena in Small Groups. F. K. Taylor.—p. 690.
*Maternal Age in Familial Mongolism. L. S. Penrose.—p. 738.
Anomalous Physical Signs of Bodily Disease in Mental Deficiency. B. H. Kirman.—p. 783.

Glutamic Acid and Its Salts in Epilepsy.—Conflicting reports [illegible] the effect of glutamic acid in epilepsy led to the experiments [illegible]bed in this paper. Preliminary experiments suggested a [illegible]ence between the effects of glutamic acid and sodium glutamate, which apparently has not been considered by most other investigators. These experiments were designed to determine whether such a difference exists and whether it is due to the effect of the sodium ion on water balance, which in turn is related to the tendency to seizures. Patients were treated who had petit mal seizures with or without grand mal attacks and whose electroencephalographic records contained spike and wave activity. The clinical and electroencephalographic effects of glutamic acid and its sodium and potassium salts were investigated in 16 epileptics. The sodium salt was given intravenously in a few experiments, and orally in longer experiments to compare the acid and potassium salt. It was shown that the salts given orally significantly increased epileptic activity in the electroencephalogram, and the acid produced a decrease, but not at a statistically significant level. No consistent clinical changes were demonstrated, although five of eight patients given glutamic acid more than a month reported a temporary decrease in the number of seizures.

Maternal Age in Familial Mongolism.—Available data on familial mongolism in which degree of relationship and maternal age were specified were assembled. Analysis of these data suggested that mongolism could be due to a single very common gene (frequency: 1 in 5 in the general population). All homozygous fetuses are susceptible. Since 1 in 25 of all fetuses is homozygous, but only about 1 in 27 of homozygous fetuses is actually affected, the absolute incidence is 1 in 675 at birth. Manifestation of the condition is largely controlled by factors connected with maternal age. In cases showing inheritance through the mother, maternal age is lower. To account for this, it is suggested that the protective effect of young maternal age on the susceptible fetus is reduced when the mother herself is homozygous for the hypothetical gene, that is, when she herself is a mongol or a potential mongol.

Lancet, London

2:647-694 (Oct. 13) 1951

Morbus Coeruleus and Its Surgical Treatment. M. Campbell.—p. 647.
Spastic Paraplegia in Late Adult Life with Degeneration and Protrusion of Cervical Discs. J. D. Spillane and G. H. T. Lloyd.—p. 653.
*Spread of Infection by Streptomycin-Resistant Tubercle Bacilli. J. T. Harold.—p. 658.
Inquiry into Treatment of Fibrositis with Observations on Vascular Communications Between Bone and Muscle. C. B. Heald.—p. 659.
Isolation of Coxsackie Virus from Case with Atypical Clinical Features. R. M. Forrester and J. O'H. Tobin.—p. 663.
Effects of Oral Cortisone on Water Diuresis in Addison's Disease and Hypopituitarism. S. Oleesky and S. W. Stanbury.—p. 664.
Heart Shape and Body Build. R. W. Morris and L. M. Jacobs.—p. 666.
*Toxic Hepatitis from Para-Aminosalicylic Acid. G. D. W. McKendrick.—p. 668.

Spread of Infection by Tubercle Bacilli.—The spread of infection by streptomycin-resistant strains of tubercle bacilli has been feared ever since such strains were recognized. Two examples of such transmission are reported in this paper. Harold points out the following criteria for establishing the transmission of streptomycin-resistant tuberculosis: 1. Strains of tubercle bacilli isolated from the infected patient must be proved streptomycin-resistant before treatment with streptomycin. 2. There must have been contact with a patient known to harbor streptomycin-resistant strains. 3. The possibility of transmission from another source should be excluded. In both the cases reported here the three conditions seem to have been fulfilled. Eight similar cases reported by others are summarized. In these eight cases, six of which occurred in hospital workers, the level of streptomycin resistance was sufficiently high to exclude the possibility of infection by any source other than a streptomycin-treated tuberculous patient.

Toxic Hepatitis from *p*-Aminosalicylic Acid.—A man, aged 27, with an early tuberculous lesion in the right lung was given a course of streptomycin (1 gm. intramuscularly daily) and *p*-aminosalicylic acid (18 gm. by mouth daily) at home. After several weeks of this medication, malaise, chills, and irritation of the skin developed, and several days later a rash appeared. The patient continued to take the *p*-aminosalicylic acid for 10 more days. Jaundice, high fever, and enlargement of the liver and axillary and inguinal lymph nodes appeared. A diagnosis of toxic hepatitis was made, and treatment with a high protein diet and an antihistamine preparation was begun. The rash slowly faded, but the jaundice became severer and cutaneous hemorrhages appeared. A trial with penicillin also resulted in an allergic reaction. The signs of toxic hepatitis subsided in about two months. Correspondence with an author who had reported a similar case revealed that jaundice from *p*-aminosalicylic acid developed in several patients in whom the drug was continued after the first toxic symptoms appeared. Patients taking *p*-aminosalicylic acid at home should be warned about possible toxic symptoms.

2:695-742 (Oct. 20) 1951

Cardiac Symptoms. J. Parkinson.—p. 695.
*Hepatic Glucose Output and Hepatic Insulin Sensitivity in Diabetes Mellitus. A. G. Bearn, B. H. Billing and S. Sherlock.—p. 698.
*Aberrant Renal Arteries and Hypertension. A. G. Marshall.—p. 701.
Chemotherapy of Streptococcus Pyogenes Infection of Burns. D. M Jackson, E. J. L. Lowbury and E. Topley.—p. 705.
Antibiotics in Smallpox. J. P. Marsden and W. J. Coughlan.—p. 711.
Antibiotics in Smallpox. G. E. Breen.—p. 713.
Chloramphenicol and A.C.T.H. in Smallpox. J. B. Stolte and G. J. Sa
—p. 715.

Liver Function in Diabetes Mellitus.—*Normally* the liver plays an important part in the mechanism whereby insulin lowers the blood sugar level, and it has been suggested that in diabetics differences in insulin sensitivity are related to the functional capacity of the liver. Changes in the output of glucose by the liver after a standard dose of insulin can be measured by hepatic vein catheterization. The authors used this technique to measure the hepatic output of glucose in 39 normal persons and 43 diabetics. Under basal conditions there is no significant difference between the hepatic glucose output in diabetic and in normal subjects. Insulin (0.1 unit per kilogram of body weight administered intravenously) results in an immediate fall in the hepatic glucose output. In normal subjects this fall is fairly constant. In diabetic subjects the fall in output varies, so that diabetics can be divided into hepatic-sensitive and hepatic-insensitive types. In hepatic-sensitive diabetics administration of insulin results in a greater than normal fall in the hepatic glucose output. The patients are young and thin, and ketosis develops easily. Sections of the liver taken by aspiration biopsy show no histological abnormalities. In hepatic-insensitive diabetics insulin results in a less than normal fall in the hepatic glucose output. These patients are middle-aged and obese, and ketosis rarely develops. Sections of the liver removed by aspiration biopsy show fatty change. Hepatic-sensitive diabetics become hepatic-insensitive with severe ketosis, but sections of liver show no remarkable histological change.

Aberrant Renal Arteries and Hypertension.—This report deals with the incidence of aberrant renal arteries in patients with hypertension. It is based on observations in 400 routine necropsies. The kidneys, aorta, and ureters were removed from the body intact and then dissected. The aorta was opened from the back, and the orifices of accessory arteries could sometimes be seen. The fat and connective tissue were carefully dissected from the hilum of each kidney. Decapsulation of the kidneys often revealed cortical arteries, which then could be followed to their origin. Each case was then assessed for postmortem evidence of hypertension, including an enlarged heart and hyaline changes in the renal arterioles, as well as for an antemortem record of elevated blood pressure. In about 50% of the cases without evidence of hypertension aberrant arteries were found, but in the hypertension group these were present in about 80%. The incidence was approximately the same in both sexes. A statistical analysis suggests that such a correlation is very unlikely to arise by chance. No explanation could be found for the higher incidence of hypertension in patients with aberrant renal arteries. The presence of such arteries may, however, be associated with abnormalities of renal tract function such as urinary stasis, and may thus be responsible for the association commonly found between hypertension and pyelonephritis. Familial differences in the incidence or distribution of aberrant renal arteries may explain why hypertension is commoner in some families than in others.

Medical Journal of Australia, Sydney

2:213-244 (Aug. 18) 1951

Research in Psychiatry. J. F. J. Cade.—p. 213.
Lithium Treatment of Maniacal Psychosis. C. H. Noack and E. M. Trautner.—p. 219.
Some Aspects of Natural History of Hypertensive Vascular Disease. B. S. Hetzel.—p. 222.
Acrylic Splint for the Arthritic Hand. M. Kelly.—p. 229.

2:245-280 (Aug. 25) 1951

Problem of Schizophrenia. J. F. Cade.—p. 245.
Australian Life Tables, from a Medical Point of View. H. O. Lancaster.—p. 251.
Pre-Bronchiectasis. H. B. Harwood.—p. 258.
*Chloride-Testing Paper for Clinical Use by Untrained Persons. J. Devine.—p. 264.

Chloride-Testing Paper for Clinical Use.—The test paper described is intended for use by nurses or untrained persons in rapid clinical estimation of chlorides in the urine or other body fluids. The method was originally developed to enable nurses to test the chloride concentration of all specimens of urine passed by patients who were receiving fluids by intravenous administration. The test is applicable to other body fluids, including blood. The chloride concentration is estimated by dropping a small piece of indicator-paper into the fluid being tested and noting the time required for the color to change from brown to white.

2:281-312 (Sept. 1) 1951

The Life and Times of William Gosse. C. O. F. Rieger.—p. 281.
*Incidence of Bronchogenic Carcinoma. D. L. Wilhelm.—p. 284.
Tuberculosis Survey of Norfolk Island. M. G. Pinner.—p. 293.

Incidence of Bronchogenic Carcinoma.—The annual incidence of primary cancer of the lungs compared to the incidence of cancer of the stomach, colon and rectum, breast, uterus, prostate, and esophagus, was studied in 7,000 consecutive necropsies performed at the Royal Adelaide Hospital between 1929 and 1948. During this period the incidence of bronchogenic carcinoma increased and carcinoma of the prostate, breast, and uterus increased at a lesser rate. Carcinoma of the esophagus remained constant in occurrence, and cancer of the stomach and of the colon and rectum became less frequent. The incidence during successive five-year periods showed the same relative changes except for carcinoma of the stomach, colon, and rectum, which remained constant in occurrence. Although the incidence of cancer of these organs at necropsy is best considered as a percentage of hospital admissions, the alternative expression as a percentage of all cancer at necropsy is better than expression as a percentage of the total number of necropsies performed. The incidence of antemortem diagnosis of primary cancer of these same organs in hospital admissions during the same period showed a pronounced rise for the uterus, colon, and rectum, and lung, a less marked rise for breast, no change for esophagus and prostate, and a decrease for the stomach. At necropsy the organ distribution of cancer in descending order of frequency was stomach, lung, colon and rectum, prostate, esophagus, breast, and uterus. Clinically the order was uterus, colon and rectum, stomach, breast, prostate, esophagus, and lung. For the organs under consideration, bronchial cancer at necropsy rose from fourth place during the period of 1929-1933 to top position during the period of 1944-1948, while clinically it rose only from seventh to sixth position over carcinoma of the esophagus. The clinical incidence of total malignant disease in men expressed as a percentage of hospital admissions during the years 1929-1948 was constant. The incidence of bronchogenic carcinoma at the Royal Adelaide Hospital was greater relative to the total number of cancer cases observed at necropsy than in other published series; otherwise the incidence equalled that in other countries. The available evidence suggests that in this series the increase in the incidence of bronchogenic carcinoma is relative and apparent.

2:313-348 (Sept. 8) 1951. **Partial Index**

Intrahepatic Biliary Tract Obstruction of Unknown Origin: So-Called Cholangiolitic Hepatitis. S. Goulston and M. Smith.—p. 313.
Mortality from Congenital Malformations in Australia. H. O. Lancaster.—p. 318.
*Status Epilepticus Occurring During Cortisone Therapy. E. H. M. Stephen and K. B. Noad.—p. 334.

Status Epilepticus During Cortisone Therapy.—The case reported was that of a girl, aged 15, who showed the polyarthritis, muscular wasting, anemia, lymphadenopathy and splenomegaly characteristic of Still's disease. With physiotherapy, blood transfusions, and administration of iron, thyroid extract and vitamins, the patient became ambulatory and able to use her hands well. Her condition after the initial improvement remained unchanged, and a course of cortisone therapy was decided on. She was given 50 mg. twice a day for one day, every six hours for five days, and twice a day for two days; then she was given 37.5 mg. twice a day for two days. During the night of the 10th day of treatment she complained of nightmares and a headache. The following morning she could not be roused, and about an hour later had a typical epileptiform convulsion. After a brief interval fits recurred until typical status epilepticus developed, requiring anesthesia for its control. After she was transferred to another hospital, status epilepticus recurred, and a barbiturate was given intravenously. After recovery from the effects of the anesthetic, the girl was restless, confused, and irrational, but steadily improved, and 10 days later could be returned to the first hospital. A striking change in the patient's demeanor was obvious. The author cites another case from the literature in which epileptiform seizures occurred during treatment with cortisone and suggests that there is risk in administering hormones, and they should be used only when strictly indicated and where adequate supervision is possible.

Medicina Clínica, Barcelona

17:69-138 (Aug.) 1951. **Partial Index**

*Changes of Electrical Resistance of Skin in Injury of Peripheral Nerves. J. M. Espadaler Medina.—p. 88.

Electrical Resistance of Skin.—This test was made on nine patients before and after treatment for traumatic injury [illegible] ripheral nerve. The following conclusions are re [illegible] anatomical or functional sectioning of a nerv an increase in the electrical resistance of the skin over the denervated area. This altered electrical resistance returns to normal after suture of a sectioned nerve or after medical, physical, or surgical treatment (without suturing) in cases of post-traumatic functional impairment of the nerve supply. The increased electrical resistance of the skin as well as the associated total lack of function of the sweat glands is due to sympathetic paralysis that follows injury of the peripheral nerve. The test is of value in showing the type and degree of nerve injury before treatment, and in detecting malingerers. After treatment it is of value in following the progress of recuperation of the nerve after suture or after medical, physical, or surgical treatment.

Minerva Medica, Turin

42:139-166 (Aug. 4) 1951. **Partial Index**

Question of Crisis of Pneumothorax. A. Rabino.—p. 139.
Tuberculosis and Adolescence. V. Donadio.—p. 143.
*Reaction of Reticulohistiocytic System to "Pan-Roentgen-Therapy" in Patient with Tuberculosis. M. Ghione and C. Saggioro.—p. 146.

"Pan-Roentgen-Therapy" in *Patients with Pulmonary* Tuberculosis.—A new technique of roentgen therapy is reported for which the authors have coined the term "tele-pan-roentgen-therapy." It consists of applying in one session small doses of roentgen rays to the entire surface of the body. Twenty young patients, 8 women and 12 men, with pulmonary tuberculosis who were in moderately good general condition were given this type of irradiation therapy to determine the reaction of the reticuloendothelial system. Chemotherapy and antibacterial treatment had not been given for six months previously, although at the time of the therapeutic trial with the new technique the patients were undergoing pneumothorax. A weekly dose of 3 r was applied to the entire body anteriorly and posteriorly for a total dose of 60 r in the course of 10 weeks. The effect of "tele-pan-roentgen-therapy" on the reticuloendothelial system of the patients was evaluated with roentgenograms and laboratory tests taken before, during, and after the therapy. The metabolism of the cells was stimulated. The bilirubin level of the blood showed a pronounced increase after the fifth irradiation. Granulopoiesis (Adler-Reiman test) was also increased after five irradiations. The mast cells were stimulated to greater production of heparin, and secretion of hyaluronidase was thus inhibited. Because this enzyme increases the permeability of the connective tissue, its inhibition prevented the passage of the tuberculotoxin products of the necrotic foci through the histiocytic barrier of the tubercle and tuberculous toxemia was lessened. These reactions explain the drop in the erythrocyte sedimentation rate, the modifications in the blood constituents, and the improvement in the general condition that were observed in the patients after this new type of irradiation therapy.

42:191-218 (Aug. 18) 1951. **Partial Index**

*Terramycin in Bacterial and Protozoan Infections. G. Izar and A. Gaspersic.—p. 191.
Clinical Study on Use of Terramycin. G. Lenti and M. Fazio.—p. 195.
Determination of Phospholipoprotein Fractions in Physiopathological Study of Chronic Hepatopathies. A. Fasoli and M. Bonelli.—p. 204.

Terramycin in Bacterial and Protozoan Infections.—Terramycin was administered to three patients with brucellosis, two with dental abscess and one each with amebic dysentery, Reiter's disease, intestinal sepsis, sepsis of undetermined nature, and cystopyelitis. Previous antibiotic therapy with penicillin, streptomycin, aureomycin, and chloramphenicol (chloromycetin®) had failed in all the patients. The drug was administered orally every three hours in doses of 250 mg. The total dosages varied from 5 gm. to 20 gm. No untoward reactions were observed. In almost all the patients temperature was permanently restored to normal on the fourth day, symptoms had disappeared, and improvement in the general condition was good. Only the patient with sepsis of undetermined origin, a boy 10 years old, was a therapeutic failure. Terramycin is indicated in treatment of brucellosis, intestinal sepsis, Reiter's disease, surgical infections resistant to other antibiotics, and infections of the urinary tract. Combined with sulfonamides, it enhances their therapeutic action. Terramycin has a wide range of bacteriostatic activity because it influences not only Gram-positive and Gram-negative microorganisms but also some protozoa.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

95:2761-2860 (Sept. 22) 1951. **Partial Index**

*Four Cases of Congenital Heart Disease in One Family. P. Elshove.—p. 2768.
Pseudo-Epitheliomatous Hyperplasia in Several Chronic Inflammations of Skin. A. W. Thöne.—p. 2772.
Erosion of Respiratory Passages After Inhalation of Ammonia Gas. K. Oosterhuis.—p. 2775.

Familial Congenital Heart Disease.—Elshove describes a family in which four members had congenital cardiac defects. A brother and sister both had an open ventricular septum. Another brother had stenosis of the aorta, and an aunt (sister of the mother) very probably also had an open septum.

95:2861-2924 (Sept. 29) 1951. **Partial Index**

Reticuloses. H. T. Deelman.—p. 2871.
Diagnostic Possibilities when Bronchial Tumor is Suspected. J. Swierenga.—p. 2878.
*Treatment of Cancer of Bladder by Total Extirpation of Bladder and Implantation of Ureters into Sigmoid at One Time. H. C. E. M. Houtappel.—p. 2884.

One-Stage Operation for Bladder Cancer.—Houtappel recommends that ureterosigmoidostomy and cystectomy be done in one operation in patients with cancer of the bladder. He did this in 23 patients and found that the postoperative reactions are usually slight and the operative mortality is relatively low. Consequently, he prefers this one-stage to the two-stage operation.

Nordisk Medicin, Stockholm

46:1357-1398 (Sept. 12) 1951. **Partial Index**

*Migratory Thrombophlebitis. N. Vinther-Paulsen.—p. 1357.
*Multiple Thrombophlebitis (Migratory Thrombophlebitis). N. Vinther-Paulsen.—p. 1361.
Scarlet Fever Treated at Home. L. Leisti and J. Wickström.—p. 1364.
Allergy to Iodine. R. Hed.—p. 1371.

Migratory Thrombophlebitis.—*Primary idiopathic migratory* thrombophlebitis, which occurs in otherwise well persons, is characterized by repeated thromboses that move from place to place. After periods of varying length the thromboses may appear in almost every venous area in the body. The superficial veins are oftenest involved, but there may be pulmonary and cardiac symptoms, symptoms from the deep veins in the extremities, from the visceral veins, and from the central nervous system. Of the 111 cases reported in the literature, 21 were fatal. Only about one-fifth were in women. In about half the cases focal infection was established; sometimes the disorder disappeared on removal of the focus. Hypercoagulability of the blood is thought to be a factor in development of the disorder. At necropsy thrombosis of the mesenteric vein was found to be the most frequent cause of death. The disease is chronic. Spontaneous remissions are common, but no case has been observed long enough to establish permanent cure. Thromboses in the extremities, brain, kidneys, and portal vein led to chronic sequelae. *With regard to the late prognosis* the tendency to development of Buerger's disease *must be borne* in mind. In recent *years treatment* with dicumarol has been applied, but nevertheless fatal visceral thromboses have been reported. The anticoagulant treatment must be extended over a long time, and ambulant treatment is considered indefensible even with daily examination. Secondary thrombophlebitis must be excluded before the diagnosis of migratory thrombophlebitis is possible.

Multiple Thrombophlebitis (Migratory Thrombophlebitis).—Five cases of migratory thrombophlebitis *in young* or middle-aged men are described. Diagnosis was *not made* till late in the course of the disease. The *shortened coagulation time* indicates that the disorder is related *to hypercoagulability* of the blood. Two cases were *in uniovular twins*; in one of these typical thromboangiitis developed. Two patients died, the others are disabled. *Continuous dicumarol* treatment in two cases prevented recurrence of the *thrombophlebitis*, but in the one case cessation of the treatment after five months was followed at once by new episodes of thrombophlebitis. A typical case of secondary thrombophlebitis in a man aged 60 is also reported.

BOOK REVIEWS

Nobel: The Man and His Prizes. By H. Schück and others. Edited by Nobel Foundation. Cloth. $6. Pp. 620, with portrait. University of Oklahoma Press, Norman, 1951.

This exciting volume fills the need for an authoritative account of Nobel's life, the manner in which laureates are selected, and the place of prize-winning researches in man's increasing understanding of nature and his place in the world. The life of Nobel is the story of an unhappy genius, a man without a country, who linked his name with the foremost creative minds of this century and with the highest honor the world can bestow on them. The selection of prize-winners is an intricate, painstaking process, involving months of labor. There is an orderly timetable of nominations, screenings, evaluations, investigations, further screenings, and final selections. Although individual selections may be sometimes questioned, a better scheme for arriving at selections would tax the most ingenious person.

In the sciences, the prize-winning experiments are recounted in the context of the then current scientific thought. A background of research progress by others is developed, into which the work of the laureate is integrated as part of a progression in scientific investigation. Informative and scholarly, the book is anything but stuffy. It is replete with items of human interest such as an account of the prize-hungry scientist who angrily protested the fact that he was not selected. Rutherford, chemistry winner in 1908, ostensibly observed the now abandoned admonition to secrecy at being selected; however, he wrote pointedly to a friend, "I may tell you, in strict confidence, that my wife and I are going to Stockholm . . . on the tenth of December." When Domagk was elected in 1939, he wrote acknowledging the high honor but was uncertain as to whether his government would permit him to accept the award. A month later (and after some secret police beatings and a sojourn in jail), he wrote an excoriating letter to the Nobel Committee, bitterly deriding them for insulting him and Germany. Examples of human inconsistencies in the selections are cited with refreshing frankness. Physicians and investigators will find this book worth while.

Health Observation of School Children: A Guide for Helping Teachers and Others to Observe and Understand the School Child in Health and Illness. By George M. Wheatley, M.D., M.P.H., Third Vice-President, Health and Welfare, Metropolitan Life Insurance Company, New York, and Grace T. Hallock. Cloth. $4.75. Pp. 491, with 86 illustrations by Barbara Pfeiffer. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

Because it meets a need recognized but neglected for several years, this volume will be of much assistance in the area in which health education should receive its greatest impetus, the school. As the teacher has intimate contact with the child for a longer period of time each day than the average parent has, it is obvious that teachers should have an adequate understanding of the basic health facts. The authors have prepared this volume with that point always in view, and the result is excellent.

Orientation of the teacher is provided in the early chapters, which deals with the child as a whole and as a growing organism. This is followed by interpretations of the child's thoughts and feelings and actions and reactions, as these are related to nervous system function. Succeeding chapters deal with the heart and blood, the respiratory system, the digestive system, the skin, vision, and hearing, and the bones and muscles. Explanations are full, but are kept on a nontechnical level. There is an abundance of illustrative material in the form of tables, charts, diagrams, drawings, and photographs. Helpful special features include a list of 32 national organizations from which health education material is available and an extensive chapter-by-chapter tabulation of appropriate films and their sources. This volume will serve all schoolteachers well, especially those at elementary grade levels. It is hoped that teacher-training colleges will recognize its value.

Decompression Sickness: Caisson Sickness, Diver's and Flier's Bends and Related Syndromes. Compiled under auspices of Subcommittee on Decompression Sickness, Committee on Aviation Medicine, Division of Medical Sciences, National Research Council, Washington, D. C. Cloth. $8.50. Pp. 437, with 88 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1951.

Not until the beginning of World War II were the practical implications of decompression sickness for high altitude flight fully realized. A comprehensive study of the subject was initiated at that time by the National Research Council (Subcommittee on Decompression Sickness) under the guidance of John F. Fulton. The results of these investigations, which up to the present time were not publicly available in their entirety, have been compiled in this volume containing contributions by 21 authors. The objective as outlined by the editor, "to study the problem from a broad biological standpoint with a view to elucidating the factors involved in bubble formation in tissue and devising ways and means of minimizing the dangers arising from aeroembolism," is well reflected in the diversity of approach documented in the various contributions. The arrangement of the material is in the manner of a symposium. Subjects such as the clinical manifestations and incidence of decompression sickness at high altitudes and subsequent to exposure to high pressure in relation to exercise, age, constitution, and environmental factors, the effects of preoxygenation, and the use of helium are dealt with by several investigators in a critical manner. This is entirely justified in view of the scant knowledge and experience hitherto available and the controversial nature of the specific etiology of decompression sickness. The consensus is that the evolution of gas bubbles is primarily responsible for the affliction; however, whether the bubbles are located in the tissues, extracellular or intracellular, or in the blood vessels is an open subject. Nitrogen is unanimously acclaimed as the chief component of these bubbles, although one author denotes this as only an accident of nature. In other sections, more emphasis is given to the significance of diffusion and the lipid solubility properties of gases. Studies using radioactive inert gases throw new light on gas exchange in various parts of the body and on blood-tissue perfusion relationships.

Brilliant experiments on models demonstrate the physical factors in bubble formation, the pressure difference between dissolved gases and hydrostatic pressure in the fluid, and the importance of gas nuclei. The effects of cavitation are described in a concise chapter. In this connection, the elusiveness of valid criteria for the prediction of incidence or severity of decompression sickness is brought clearly to mind by the statement that individual susceptibility depends on not less than nine physical factors. It is not surprising that empirical attempts to find standards for the preselection or classification of persons for either high altitude flights or for diving activities have not been wholly successful, in spite of careful statistical evaluation of large test groups. The test procedures employed in these studies, as far as altitude exposure and rate of ascent are concerned, were primarily determined by the practical aspects prevalent in aviation during World War II. Future investigators will have the advantage of the sound fundamental principles for experimental design presented in this book. The experimental data are excellently reproduced in a large number of charts, photographs, and tables. All references are readily accessible in a comprehensive bibliography, which also includes unpublished technical reports of various government agencies concerned with the subject.

Headache. By Louis G. Moench, M.D., Assistant Clinical Professor of Medicine, University of Utah School of Medicine, Salt Lake City. Second edition. Cloth. $4.50. Pp. 217, with 58 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1951.

This monograph on headaches is admirably suited for frequent reference to information about headache, which is one of man's commonest and most annoying ailments. Although the first and second editions are much the same, the book is highly recommended for both perusal and purchase.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Clinical and Roentgenologic Evaluation of the Pelvis in Obstetrics. By Howard C. Moloy, M.D., M.Sc., Assistant Clinical Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University, New York. American Monograph Series. Paper. $2.50. Pp. 119, with 68 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1951.

This monograph, by one of the well-known team of Caldwell, Moloy and D'Esopo, who made a highly significant contribution to the subject of pelvic morphology in women, is well worth reading. The author discusses the following subjects: general morphology of the pelvis, clinical examination of the pelvis, the fetus, the mechanism of labor, forceps operations, breech delivery, version and breech extraction, roentgenologic technique, the roentgenological report, and methods for quantitative estimation of cephalopelvic disproportion. The leading textbooks on obstetrics now point out how fallacious clinical estimation of pelvic size and morphology can be. On the other hand, roentgenography will reveal with accuracy the size and shape of the pelvis; in addition, several techniques have been developed that measure the degree of cephalopelvic disproportion with a fair degree of accuracy. Of course, such techniques must usually be coupled with a test of labor to see how much the uterine contractions and the molding of the baby's head will accomplish. As Moloy emphasizes, if the clinical course of labor is used to determine disproportion without roentgenograms, some patients will be unfortunate enough to have extremely painful labor in case of great disproportion, and the child may be born by a spontaneous delivery with serious injury. Roentgen methods of examination will aid in the discovery of such cases and, far from replacing the clinical test of labor, will allow the trial of labor to be conducted with an accurate knowledge of the fetal-pelvic relationship.

Although the advances in obstetrics made by roentgenography are great, there are still problems for future investigation. Moloy mentions a few, such as measurement of the adequacy of the mid pelvis and lower pelvis with regard to the interspinous diameter, side wall convergence and lower sacral abnormalities, proof of the presence or abscence of significant separation at the symphysis in labor associated with cephalopelvic disproportion, measurement of the fetal head in breech presentations, the effect of excessive molding upon the future mental development of the child in cephalopelvic disproportion, operative deliveries and the relationship of cystocele, rectocele, and prolapse of the uterus to pelvic abnormalities, and operative deliveries.

The book is well written; the illustrations are numerous, clear, [illegible]d instructive; and the bibliography is well chosen and complete. Moloy is to be congratulated on this monograph. The publishers are also to be complimented for producing an inexpensive book that contains legible type, clear illustrations, and sturdy paper.

Anesthesia in Dental Surgery. By Sterling V. Mead, D.D.S., M.S., B.S. Second edition. Cloth. $12.50. Pp. 648, with 212 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

The first part of this three part book deals with the selection of anesthesia. The author emphasizes both the necessity for a review of the patient's history and physical condition before selection of anesthesia and the fact that no one anesthetic is suitable for all conditions encountered in dental practice. Part 2 deals with local, and Part 3 with general anesthesia. After presenting a history of local anesthesia, the anatomic basis for local anesthesia in dentistry is reviewed. This is followed by a discussion of the physiology of local anesthesia and the pharmacology of the drugs used. This section of the book could be improved considerably in future editions; the chapters on armamentarium and technique in local anesthesia are well written. Part 3 presents a history of general anesthesia followed by a review of its physiological aspects, the pharmacology of the drugs involved, and the armamentarium and technique of administration. The author is to be commended for his emphasis on the necessity for special training before the administration of a general anesthetic. The book closes with chapters on the complications of general anesthesia, emergency measures and resuscitation in cases of anesthetic accidents, and postoperative care. Throughout the book the variable use of proprietary and official names for drugs is somewhat confusing. A case in point occurs under anesthetic solutions, where monocaine® hydrochloride and butethamine hydrochloride are presented in separate discussions. This is obviously confusing, as they are the same substance. Also confusing is the varying use of the apothecaries' and metric system for doses. In future editions the author would do well to adopt uniform use of the metric system, with parenthetic use of the apothecaries' system if desired.

Although certain sections of the book are not perfect, there can be no doubt that it is basically sound and that an improvement in dental anesthesia would result if its teachings were followed.

Can We Agree? A Scientist and a Philosopher Argue about Ethics. By Chauncey D. Leake and Patrick Romanell. Paper. Pp. 110. University of Texas Press, Austin, 1950.

In this book, Drs. Leake and Romanell, a scientist and a philosopher, respectively, present essays concerning the basis of ethics. Their viewpoints are so different that their attempt to reach agreement fails almost completely; however, there is one point on which they agree, and on this subject both authors express themselves clearly. Dr. Leake wrote, "Most gratifying has been the impression that it may be possible to promote a cooperative endeavor between interested philosophers and scientists in exploring a scientific approach to ethics"; Dr. Romanell said, "I am in complete sympathy with his [Dr. Leake's] most timely plea for a co-operative endeavor between philosophers and scientists in the crucial field of ethics."

Dr. Leake believes that philosophers should undertake the scientific method of experimentation in problems of value in ethics. He feels that the scientist's knowledge of physiology, neurology, and psychology justifies the extension of the scientific method to philosophy to the exclusion of the metaphysical approach. He claims that scientific knowledge has produced sufficient verifiable facts regarding ourselves and our environment to enable one to estimate the moral value of their implications and to determine their ethical significance.

The specific disagreements of these authors over ethical methodology are due to their contrasting conceptions of metaphysics. Dr. Romanell claims that there are three points of disagreement: (1) the nature of scientific method, (2) the nature of ethics, and (3) the nature of metaphysics. He thinks of Dr. Leake as a typical scientist who, as a positivist, employs the term "metaphysics" as a symbol for all supernatural explanations or speculations about phenomena. He believes that a metaphysical synthesis that claims cognitive import must, by hypothesis, be speculative in character, because of the fragmentary status of our scientific knowledge at any moment. According to him, "Metaphysics is a stubborn attempt to understand the ways of things as a whole, while science tries to explain them as parts." "Both science and metaphysics are hypothetical in form and are different only in content," he says, and, furthermore, "science and metaphysics are methodologically continuous and thus complement each other." He feels that the principles of metaphysics logically presuppose the principles of science and that a sound ethical theory requires a scientific flooring to be relevant to human nature as well as a metaphysical ceiling to be significant for human destiny. He says that his ethics are Promethean and Dr. Leake's are Darwinian. He believes that science aims at providing information, while philosophy aims at providing wisdom, and that science searches for organized and tested information about the parts of the universe, while philosophy searches for the best wisdom about the whole universe and man's place in it.

Dr. Leake's viewpoint can be summed up in this sentence "The probability of survival of a relationship between individual humans or groups of humans increases with the extent to which that relationship is mutually satisfying." He believes that truth can best be obtained by the scientific method and that metaphysical conditions introduce unnecessary nonverifiable speculations. There is little doubt left regarding his appraisal of the philosopher's viewpoint when he states that "Metaphysicians may continue to announce their speculations about the everlasting structure of things and about the universal criteria of knowledge but their devotions are a wake administered to a corpse."

Although these interesting essays present many new ideas, it is not always easy to determine their exact substance. Dr. Leake's idea of survival value as a criterion for a system of ethics is interesting, but one wonders, with Dr. Romanell, whether this criterion alone would be sufficient.

Syllabus of Human Neoplasms. By R. M. Mulligan, M.D., Professor of Pathology in University of Colorado School of Medicine, Denver. Cloth. $7.50. Pp. 317, with 230 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

This book presents a wealth of material compressed into a surprisingly small space. After an introduction dealing with general problems of cancer, the tumors of the different organ systems are discussed, with emphasis on the cell from which the tumors originate. This is followed by a chapter on miscellaneous neoplasms and a supplement dealing with various cancerous and noncancerous lesions, many of which could have been just as well introduced in the respective organ systems. This book gives in a condensed but lucid form some statistical data, important clinical symptoms, the possibilities of successful surgical or radiological therapy, and a gross and histologic description of the tumors. The histologic description is especially detailed, and the cytologic description is informative. Obviously, the cytologic descriptions given cannot be applied to each individual example of such tumors; however, they will still have broad application. The classification of tumors used is logical and varies only occasionally from the generally accepted one, as does the nomenclature in some places. The numerous illustrations, which are both well chosen and well reproduced, greatly enhance this excellent book. It is highly recommended to undergraduate and postgraduate students of pathology as one of the most informative texts on this subject. It will also be of service to clinicians seeking information on the pathology of tumors.

Photosynthesis and Related Processes. By Eugene I. Rabinowitch, Research Professor, Photosynthesis Research Laboratory, Department of Botany, University of Illinois, Urbana. Volume II, Part I: Spectroscopy and Fluorescence of Photosynthetic Pigments; Kinetics of Photosynthesis. Cloth. $15. Pp. 603-1208, with illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1; 2a Southampton Row, London, W.C.1, 1951.

For over a century and a half, scientists have been studying photosynthesis in an attempt to solve this "most important biochemical process on earth" whereby organic matter is formed from stable inorganic materials. During the last 20 years, several new methods of approach have been developed (the use of flashing light, heavy hydrogen, and the isotopes of carbon and oxygen), but the progress toward a final solution of the problem has been slow, and all attempts to separate the process from the living cell have failed. The data that have been accumulated by the researchers are numerous, and the present volume deals principally with the kinetics of photosynthesis and with the spectroscopy and fluorescence of photosynthetic pigments. This book is the first part of a volume that will consist of two parts. It does not contain an index, but it does have bibliography arranged in chronological order at the end of each chapter. The second part of this volume will contain an index to both parts and will continue the discussion of the kinetics of photosynthesis. This is an important book in this field.

Klinik und Therapie der Magen-Dramkrankheiten. Von Dr. F. Depisch, Privatdozent an der Universität in Wien. Cloth. $4. Pp. 297, with 16 illustrations. Springer-Verlag, Mölkerbastei 5, Wien I, 1951.

Dr. F. Depisch, a student of Falta, is already well known for his work on diabetes. During World War II he had five years experience in a well-equipped hospital, in a department devoted to the care of patients with diseases of the stomach and intestines. This enabled him to study, with the aid of various colleagues, such important problems as the changes in the shape of the duodenal bulb following administration of atropine, the roentgen mucosal pattern of the small intestine in chronic enteritis, and the combined dietary and fever therapy of peptic ulcer. In addition, he carried out routine gastrointestinal investigations on a large group of patients who were under the stress and strain of war. In this book, Dr. Depisch presents a brief but adequate summary of his experiences. Using this information, he furnishes a practical clinical guide to the diagnosis and treatment of the diseases of the gastrointestinal tract. The book is divided into four sections covering (1) diseases of the mouth, throat, and esophagus, (2) diseases of the stomach, (3) diseases of the intestines, and (4) the infectious diseases of the intestines. Except in the fourth section, there are preliminary subsections dealing with the anatomy and physiology of the organ discussed and with technical diagnostic procedures. There is also a special subsection that discusses in detail the diagnosis and treatment of the individual diseases of the organ considered. The section on intestinal diseases, includes diseases of the peritoneum and parasitic infestations. A discussion of typhoid and paratyphoid, botulism, bacillary and amebic dysentery, and a few pages of epigrammatic advice on the outstanding problems of gastrointestinal disease conclude the book.

The volume is small and easy to handle; it is attractively bound, printed in clear type on good paper and is well arranged. Because of the expense, there are few illustrations; these are diagrammatic sketches and a few good reproductions of intestinal roentgenograms. Although there is no formal bibliography, there are occasional footnotes to important articles. Brief case reports inserted in the text clarify points under discussion. There are one or two informative diet tables and a satisfactory index. The work is recommended to any practitioner who can read German and who wants a brief but satisfactory summary of the present knowledge of the diseases of the stomach and intestines.

Lehrbuch der inneren Medizin. Band III: Innere Sekretion, Stoffwechsel, Niere, Muskeln, Gelenke, Knochen, Infektionen, Intoxikationen. Von Dr. Ernst Lauda, o. ö. Professor, Vorstand der I. medizinischen Universitätsklinik Wien. Cloth. $8.40. Pp. 715, with 32 illustrations. Springer-Verlag, Mölkerbastei 5, Wien I, 1951.

This volume is based on both the extensive clinical experience of the author and his profound knowledge of basic science. The clinical aspects receive the main emphasis. No literature references are presented; however, full consideration is given to the recent literature, including the Anglo-American. Only a few illustrations, for the most part roentgenograms of bone lesions, are included. The first chapter, which deals with diseases of the endocrine organs, is complete. The second concerns diseases of metabolism and is less comprehensive than some of the American texts, even though all clinically important aspects are well presented. The chapter on avitaminoses is relatively short. Although the chapter on urinary (mainly renal) diseases is well organized, not all statements and classifications will find full acceptance by the American reader; however, this can be expected in such a controversial field. The chapters on muscle, joint and bone diseases, and infectious diseases are comprehensive. Intoxications and diseases due to external physical causes are well presented. This book represents the thorough work of a scholar. It is surprising to find such a large quantity of well-chosen information about such a wide field authoritatively presented by one author.

Radiologic Physics. By Charles Weyl and S. Reid Warren, Jr. With foreword by Eugene P. Pendergrass, M.D., Director of Department of Radiology, University of Pennsylvania, Philadelphia. Second edition. Cloth. $10.50. Pp. 491, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1951.

This is a fairly comprehensive textbook of the physics of radiology. The text is divided into two parts. Part 1, "Scientific Method, Electromagnetism and Electromagnetic Devices," presents the physical and electrical foundations that are necessary for a thorough understanding of the variety of equipment and instruments used in the field of radiology. This material is frequently presented in relation to its practical applications. Part 2, "Radiant Energy and Its Interaction with Matter," discusses all aspects of roentgen rays and radioactive emissions. Fluoroscopic and therapeutic techniques and the measurement of and protection from radiation are also discussed in this section. This edition has an expanded section on electronics and an increased number of numerical examples. Material describing apparatus not directly connected with radiology is eliminated. Each chapter has a comprehensive bibliography of specific and general references, and the chapters dealing with fluoroscopy and therapy also contain most of the classic references to the field. The book is well written, and most of the material can be read out of context as a general reference by the physician who has had little or no background in physics or mathematics. However, for those who are interested in mathematics, the appendix will prove particularly useful. There is a concise and complete presentation of the elements of algebra, trigonometry, and the calculus; this is more than the background needed to master the equations given in the text.

The Architecture of Normal and Malformed Hearts: A Phylogenetic Theory of Their Development. By Dr. Alexander Spitzer. [Translated reprint, 1923.] With Summary and Analysis of the Theory by Maurice Lev, B.S., M.D., Associate Professor of Pathology, University of Illinois College of Medicine, Chicago, and Aloysius Vass, M. D. With foreword by Otto Saphir, M.D., Pathologist, Michael Reese Hospital, Chicago. Cloth. $5. Pp. 145, with 30 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

The original text, by the late professor of anatomy of the University of Vienna, was written in difficult, idiomatic German. This excellent translation makes this classical theory available in readable English. The theory is that the development of normal and malformed hearts "is related to phylogenetic forces operating by hydrodynamic means and catalyzed by the development of pulmonary respiration." Because the theory does not entirely conform to the findings of later embryologic research, the translators offer a studied criticism and modification of the original theory, but these "do not detract from the brilliant dynamic approach of Spitzer." A bibliographic note, a bibliography of Spitzer's work, and a good index are included. The physical and artistic qualities of the book conform to the high standards of the publisher. No one desiring a broad concept of congenital malformations of the heart can afford to overlook Spitzer's work. This book should be available in the library of every medical school.

General Theory of Neuroses: Twenty-Two Lectures on the Biology, Psychoanalysis and Psychohygiene of Psychosomatic Disorders. By Rudolf Brun, M.D., Professor of Neurology and Neurobiology, University of Zürich, Zürich. Translated by Bernard Miall. [Second edition.] Cloth. $10. Pp. 469, with 6 illustrations. International Universities Press, Inc., 227 W. 13th St., New York 11, 1951.

This book is translated from the original, which first appeared in German in 1942. It gives full consideration to the psychological aspects of the neuroses and endeavors to incorporate the theory of the neurosis into a general medical and biological setting. The author takes the viewpoint that there is no really insuperable opposition to the combining of the purely psychological and physiological aspects of neuroses. Such a combined framework is considered to do greatest justice to the asic contributions of Freud in the development of a sound eory of neuroses, which were originally based on medical ology. The book is divided into four parts. These provide a general introduction to the subject, consideration of psychosomatic relationships, descriptions of the mechanism of symptom formation, and a formulation of the construction of neurosis in its initial and final stages. The material presented should be of considerable interest and value to students of psychology and psychiatry as well as to students in general biology.

The Vitamin B Complex. By F. A. Robinson, M.Sc.Tech., LL.B., F.R.I.C. Cloth. $9. Pp. 688. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, 1951.

Considering the vast scope of its subject matter this volume is well written and amazingly complete. The subject matter is divided according to individual vitamins; 122 pages are allotted to aneurine (thiamine), 78 to riboflavin, 83 to nicotinic acid (niacin), and 51 to pyridoxine. All aspects of each of these nutrients are well covered; for example, the section dealing with aneurine is subdivided into separate chapters, which provide integrated discussion of historical background, isolation, chemical constitution, synthesis, stability, biological estimation, microbiological assay, chemical estimation, occurrence in foodstuffs, deficiency in animals, deficiency in man, metabolism, intestinal synthesis, animal and human requirements, pharmacological action, function, nutrition of microorganisms, effects in plants, requirements of insects, and analogues.

Because of the breadth of treatment this volume should be of interest and value to many biological scientists. It is rare to discover such a happy compromise between the inclusion of a mass of confusing and irrelevant detail and an unjustified and disappointing brevity, but this author has wisely steered the middle course. The book is well written, and its physical form and format are excellent. There are no illustrations, but there is an abundance of appropriate chemical formulas and equations. Perhaps as important as any other detail, for the student in this field is the fact that the book is thoroughly and carefully documented with an extensive bibliography at the end of each chapter.

This volume is recommended without reservation to the serious student of nutrition, to the practicing physician who desires more than a smattering of knowledge of this field, and to the chemist, the biochemist, the bacteriologist, and the general biologist. The qualifications of the author, his excellent manner of presentation, and the careful documentation of fact that he has observed throughout all serve to make this volume a significan contribution to the vast and voluminous literature in the field of nutrition.

The Quantitation of Mixtures of Hemoglobin Derivatives by Photoelectric Spectrophotometry. By Francis T. Hunter, A.M., M.D., Associat in Medicine, Harvard Medical School, Boston. Cloth. $8.50. Pp. 226, wit 48 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave. Springfield, Ill.; Blackwell Scientific Publications, 49 Broad St., Oxford England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1951.

Rapid, simple, and accurate methods are described for assaying by spectroscopic methods the various blood pigment in small samples of blood and plasma (0.05 to 0.25 ml., depending on the particular determination). Except for a photoelectric spectrophotometer for use in the visible range, the only special equipment required is an apparatus for de-aerating solutions of sodium carbonate that are used for diluting blood prio to determining its oxygen saturation. This apparatus is described in detail along with the method of its use. Rapidity i secured not only through the methods for developing the color to be measured but also by the construction of conversion charts and nomograms from which the concentrations of pigments can be read. The theoretical and practical aspects of constructing charts and nomograms are carefully presented with the aid of 42 unusually clear charts. The book is well arranged and fully indexed, and it is excellently printed. This book should interest all clinical and forensic laboratories.

711 Medical Maxims. By William S. Reveno, M.D., Assistant Professor of Clinical Medicine, Wayne University Medical College, Detroit. With forewords by Frederick A. Coller, M.D., and William J. Kerr, M.D. Cloth. $3.75. Pp. 197. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

This little book consists of 711 medical maxims somewhat in the style of Hippocrates' aphorisms. Each maxim is one sentence long and usually full of meaning. For example, random opening of the book on page 104 gives the following three at the top of the page: "585. Topical sulfonamides contribute little to the favorable results of reparative wound surgery; 586. Breast cancer may run a very protracted course in the aged; and 587. Hemorrhage is the most frequent single finding in premature babies dying within 10 days after birth." Some of the aphorisms are obviously worth noting; others are simply obvious. Taken three or four at a time, they have some interest as a means of medical relaxation, but for steady reading they are almost as impossible as a dictionary. Also, as with any finite statements, time alters correctness, and the therapeutic maxims particularly suffer. The book obviously represents a labor of love, but its real teaching value is somewhat questionable.

This Will Kill You. By Charles Furcolowe. Cloth. $2.75. Pp. 190, with illustrations. B. C. Forbes & Sons Publishing Company, Inc., 80 Fifth Ave., New York, 1952.

Charles Furcolowe's contribution to the present day literature on "stress phenomenon" is embodied in a pseudoscientific humorous monograph. The author attempts to satirize in humorous fashion the many habits of the modern business man that lead him to an early grave. This is ably done; the desired mirthful response is invoked and the information bears some relationship to medical concepts. Such chapters as "You Too Can Have an Ulcer," "It's Easy to Go Crazy," and "What About Col are examples of comic representations of everyday thinking and living. Insofar as the book is read for laughter, the author achieves his objective. One must overlook the details of "scientific advice" as being objectionable on the grounds that no blanket prescriptions can be written for everyone. These instances should have been omitted and replaced with more of the effective humor and satire. On the whole, one gets a good laugh from the book and perhaps a mirror image of oneself.

QUERIES AND MINOR NOTES

COOMBS' TEST FOR ANTIBODIES AND SPHEROCYTOSIS

To the Editor:—*Please explain the mechanism of Coombs' test. From published reports, it is evident that the test is often positive in acquired hemolytic anemia. Can you sum up the evidence for the site of formation, and the mechanism of formation of the spherocyte?* *M.D., Pennsylvania.*

Answer.—The Coombs' test is a nonspecific test for incomplete forms of antibodies adsorbed on the surface of red corpuscles. The Coombs' serum is an anti-human-globulin serum, the active principle of which is an anti-gamma-globulin. Since antibodies are gamma globulins, Coombs' serum detects the presence of any antibodies adsorbed on the red cell. Methods for the preparation of Coombs' serum are described in "Blood Groups in Man," by Race and Sanger (Charles C Thomas, Publisher, Springfield, Ill.). The test may be performed with a direct or an indirect technic. The direct Coombs' test is done by adding red cells to Coombs' serum in an attempt to show that the cells have been sensitized by incomplete antibodies. It has been particularly useful in demonstrating sensitization of red cells by incomplete Rh antibodies. The indirect Coombs' test is designed to demonstrate the presence of incomplete antibodies in serum. The serum in question is incubated with a suspension of appropriate red cells; the cells are then washed and tested with Coombs' serum to see whether they have adsorbed antibody. If so, the cells will agglutinate.

The indirect test may be put to practical use when one must give a transfusion to a patient who has had many transfusions and who has frequent transfusion reactions when given blood of his own A-B-O and Rh type. The reactions in this instance may be caused by the less well-known blood groups for which typing serums are not available. An indirect Coombs' test may then be done using the recipient's serum and the donor's cells. A positive reaction would mean that the recipient's plasma contains an antibody for the donor's cells, and the donor should be rejected. By using this technic, several investigators have succeeded in identifying previously unknown blood groups.

The direct Coombs' test has also been employed to demonstrate that the red corpuscles in patients with acquired hemolytic anemia are sensitized by a hemolysin antibody. It is not yet possible, however, to say whether the erythrocytes in patients with hereditary spherocytosis consistently give a negative reaction with the direct Coombs' test. Boorman, Dodd, and Loutit (*Lancet* 1:812, 1946) reported positive tests in acquired hemolytic anemia, and negative tests in hereditary spherocytosis. Singer and Motulsky (*J. Lab. & Clin. Med.* 34:768, 1949) obtained a positive Coombs' reaction in all of seven patients with acquired hemolytic anemia and in only one of seven patients with hereditary spherocytosis. They mention the possibility that an immunologic hemolytic anemia may occasionally be superimposed on hereditary spherocytosis and account for a positive reaction. On the other hand, Wright and his associates (*J. Lab. & Clin. Med.* 37:165, 1951) found incomplete antibodies adsorbed on the red cells in 8 of 25 patients with hereditary spherocytosis. Differences in technic may be responsible for the different results reported. The three references given are by no means complete, but serve to illustrate the several points of view.

The only conclusion possible at present is that the direct Coombs' test is usually positive in acquired hemolytic anemia due to immune bodies and usually negative in hereditary spherocytosis. One cannot yet predict whether refinements in technic will make the Coombs' test a specific method for differentiating between these two diseases.

Spherocytes are not pathognomonic of hereditary spherocytosis. When normal red blood cells are exposed to hypotonic solutions or certain hemolytic agents, they tend to increase in thickness and take on the appearance of spherocytes. The action of circulating hemolysins is almost certainly responsible for the spherocytosis which occurs in many patients with acquired hemolytic anemia. Similar changes occur when blood stands in a test tube or undergoes stasis in the spleen. These changes for the most part, however, are reversible. By contrast, in hereditary spherocytosis, the characteristic shape of the erythrocyte seems to be due to an inherent abnormality of the red cell itself. If the cells are suspended in normal plasma, they maintain their spherocytic form. The nucleated red cells from which the spherocytes develop seem to be normal in size. Most investigators believe that the maturing red cell becomes spherocytic as soon as it loses its nucleus. Others maintain that in this disease, too, hemolysins produced by the spleen are responsible for the change. Spherocytosis, however, persists after splenectomy. The bulk of evidence favors the concept that the spherocytosis of hereditary spherocytic anemia is caused by a fundamental defect in the red cell itself and that the abnormality is evident as soon as the developing erythrocyte loses its nucleus. The nature of the defect is unknown. It may be in the stroma of the cell or, as is the case in sickle cell disease, it may be in the structure of the hemoglobin molecule.

RHINOSCLEROMA

To the Editor:—*Please discuss treatment of a young Mexican man with a diagnosis of rhinoscleroma. Klebsiella oxena has been cultured from the nose. The father and the brother of the patient also have the disease. The patient was given a six week course of streptomycin and sulfadiazine, with minimal improvement, and he now appears to have tracheal involvement.* *M.D., California.*

Answer.—In view of the minimal response to streptomycin and sulfadiazine, it is suggested that nitrofurazone (furacin®) solution be used topically in the form of a nasal spray. Streptomycin can also be tried in aerosol form in dosages of 0.5 gm. for a period of 10 days.

Although cures have been reported following roentgen and radium therapy, radiologists generally believe that such therapy is merely palliative, requiring repetition as the disease recurs. The dosage is 200 r in seven consecutive daily applications, with the following technical factors: 200 kv., 0.5 mm. Cu plus 1 mm. Al filtration, 50 cm. focus-skin distance over one field (anteroposterior over the nose). If the lesions do not disappear or greatly regress, it may be necessary to remove obstructing tissues by surgical means.

WEIGHING A RECUMBENT PATIENT

To the Editor:—*Is there an accurate and simple method whereby the weight of a recumbent patient in a standard hospital bed of known weight may be determined without use of the expensive recumbency scale (Toledo), but with use of an ordinary professional type of scale?*

Lester Meister, M.D., Long Beach, Calif.

Answer.—The best method of determining the weight of a recumbent patient is to slide him onto a light wooden stretcher just the height of the bed. This stretcher should be provided with a shelf a few inches above floor level, so that it can be balanced on platform scales. The metabolism ward of the Russell Sage Institute of Pathology, now in the New York Hospital, for 38 years has used such a stretcher with Fairbanks silk scales and has obtained weights accurate within 20 gm.

It is possible to determine weights by roughly balancing a bed on two platform scales, one at each end. The limits of error should be checked with subjects of known weight. Remember that a hair mattress contains thousands of hair hygrometers.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

SQUINT

To the Editor:—*A 15-month-old white male has severe alternating squint. Examination after instillation of atropine reveals hyperopia of no more than 1 diopter. The child uses both eyes and apparently has as yet no amblyopia. Would corrective lenses be of benefit? Will operation be necessary for muscle shortening, and what is the optimal age for operation? What is the etiology of strabismus present since birth but apparently not due to muscle paralysis?*

Grace S. Gregg, M.D., Pittsburgh.

Answer.—As convergence and accommodation are closely associated it would be desirable to know the direction of deviation in this case, whether the squint is convergent or divergent; also it would be helpful to know the effects of atropine on the position of the eyes, if any. The expected degree of hypermetropia at the age of 12 months is given by one authority at 2.58 diopters; hypermetropia of not more than 1 diopter is unusual, and since squints are usually associated with relatively high refractive errors it is doubtful whether glasses would tend to alter the degree of squint in this case. However, if definite improvement in the angle of squint was acquired (although not expected) under the influence of atropine drops, glasses might be of value and should be given a trial.

A definite answer cannot be given. The patient should be examined at repeated and frequent intervals to see if the angle of deviation varies and to watch for any change in fixation or other circumstance that might influence the status of the eyes. In all probability, eye muscle surgery will have to be done to straighten the eyes. If after several months of observation and on repeated examinations the angle of squint seems to be about the same, if the vision remains equal in each eye, and if the refraction of the eyes does not change, surgery could justifiably be done. The longer the time the eyes are straight, the better are the chances for the development of binocular single vision with good fusion.

The etiology of strabismus present since birth but apparently not due to muscle paralysis is not always clear. Without first-hand study of the patient a discussion of the possible etiology of e strabismus would be futile.

OKE ROOT IN ARTHRITIS

To the Editor:—*A friend reports being cured of rheumatoid arthritis by a whisky extract of poke root. Please tell me anything you know about this treatment.*

W. T. Edmundson, M.D., Hood River, Ore.

Answer.—Available evidence reveals no basis for the view that an alcoholic extract of poke root possesses therapeutic value in rheumatoid arthritis. Poke root, or phytolacca, was official in the National Formulary VII (1942) but has been omitted from subsequent revisions of this work. The 1938 edition of the *Epitome of the Pharmacopeia and National Formulary,* a publication prepared under the supervision of the Council on Pharmacy and Chemistry, refers to phytolacca as an "unreliable irritant, emetic, cathartic and so-called alterative." The U. S. Dispensatory 1950 states that phytolacca has been employed internally in chronic rheumatism but that there is "no satisfactory evidence that it is therapeutically useful and it is no longer prescribed by physicians."

RECURRING FEVER

To the Editor:—*I have a patient for whom a diagnosis of dengue fever was made in service in World War II. He still complains of fever, generalized aches, and arm tenderness at recurring intervals of approximately every three months. Can you inform me of proper treatment for this condition at this stage?* *Frederic G. Loomis, M.D., Waterloo, Iowa.*

Answer.—Since dengue fever is not a recrudescing disease, the recently recurring symptoms are not related to the former attack of dengue. Diagnostic efforts should be directed toward brucellosis as a characteristically relapsing disease, and also diseases such as tuberculosis, Hodgkin's disease, canicola fever, and the malignant conditions that often involve bone.

CARE OF NEWBORN INFANT'S SKIN

To the Editor:—*What is the best management of the newborn infant's skin in the immediate neonatal period? Of what proved use is hexachlorophene in the prevention of impetigo in the newborn?*

M.D., Connecticut.

Answer.—There is no single method for the management of the newborn infant's skin in the neonatal period that is generally agreed on as being best. Techniques vary from that of leaving the infant alone without removing the vernix caseosa to giving general prophylactic inunctions with ammoniated mercury, sulfathiazole ointment, or various oils containing bacteriostatic substances. Many substances have been found generally satisfactory, and avoidance of excessive cleansing and trauma to the skin is, of course, essential in all programs.

Hexachlorophene has been studied as a method for the prevention of impetigo in the newborn. An article in the *American Journal of Diseases of Children* by Glaser, Thompson, and Benson (81:329 [March] 1951) outlines a study in which it was concluded that hexachlorophene in a concentration of 1% in a bland oil-in-water emulsion was highly effective in controlling the incidence of impetigo and miliaria in newborn and older infants. This same group had previously used sulfathiazole ointment with considerable success. The danger of sensitivity to sulfathiazole topically applied was considered justification for omitting its use as a routine, substituting hexachlorophene.

SWOLLEN SUBMAXILLARY GLANDS

To the Editor:—*I am puzzled about the sudden and simultaneous enlargement of both submaxillary glands in a man who had mumps in childhood. The swelling was almost the size of a hen's egg and tender to palpation. After the use of penicillin the swelling almost disappeared in two days. He had taken cold two days before the onset of swelling and was heard to hack constantly. His antrums were tender; there was no dental infection. 1. How does one differentiate between the submaxillary nodes involved in antritis and the submaxillary glands involved in mumps? 2. What are the etiologic possibilities in this case?* *M.D., Oregon.*

Answer.—1. A high white blood cell count, mostly polymorphonuclear cells, is not present in mumps. If it were known that the patient had not had mumps previously, a skin test might be of value, after the swelling subsided, for determining susceptibility or immunity.

2. In the case cited a bacterial infection seems to have been responsible for the swelling. The rapid subsidence of the glands with penicillin treatment strongly suggests an acute inflammatory condition. If the history of mumps in childhood is reliable, that would be almost sufficient to exclude mumps. Second attacks of mumps are unusual.

SEDATIVES AND HEPATITIS

To the Editor:—*1. What is the best drug for sedation in cases of liver disease? 2. Is paraldehyde contraindicated in liver disease? 3. Is paraldehyde quantitatively excreted by the respiratory system?*

A. L. Rosenblatt, M.D., Louisville, Ky.

Answer.—There are no entirely satisfactory drugs for use as sedatives in cases of hepatitis or cirrhosis. Perhaps the safest are bromides, chloral hydrate, and paraldehyde. There is some unpublished work that indicates that barbiturates are perhaps less hazardous than has been previously believed, but clinical experience with this series of drugs has been somewhat unfortunate.

Paraldehyde is destroyed in the liver to the extent of about 80%, the balance being excreted through the lungs. In experimental liver injury, high blood levels of paraldehyde have been noted after the administration of the drug. Under such circumstances more is eliminated through the lungs, but one doubts that it is all disposed of in this manner. Chloral is, of course, destroyed in the liver by a combination with glucuronic acid and in the presence of liver disease, may give a somewhat prolonged sedative effect. It is recommended that both drugs be tried rather cautiously in moderate dosage at first, the amounts administered being increased as necessary.

DEATH OF RABBITS AFTER PREGNANCY TEST

To the Editor:—*A white woman, 33, in good health generally, has had three miscarriages, losing each fetus in three or three and a half months. Her last menstrual period was April 11, 1951. On June 26, 27, and 28, she was given two ampuls of neostigmine daily, since this did not bring on her period, it was assumed that she was pregnant. However, an obstetrician stated that she was not pregnant. On several occasions she has "spotted" a little for less than one day. She complains of dyspareunia. On August 16, results of physical examination, including pelvic examination, were negative. The patient complained of slight tenderness and soreness of the breasts for seven days, starting on August 11. Her basal metabolic rate was -23%. At weekly intervals during the past month, she has had four rabbit tests, each rabbit dying about two days after the injection of urine. The fourth test was made on urine that had been dialyzed for five hours. The result of a frog test at the same time was negative. I would appreciate your opinion on diagnosis, cause of the rabbits' death, and advice as to further management.*

Robert Palmer Trice, M.D., Richmond, Va.

Answer.—Urine that is fresh and has been collected in a clean bottle should not kill a rabbit when injected intravenously. If it cannot be used promptly, it should be refrigerated. Animals usually succumb as a result of bacteria and decomposition products in the urine. It is possible that the urinary tract of this patient harbored bacteria that were fatal to the rabbits but produced no symptoms in the patient. It may be of interest to culture a catheterized urine specimen.

CHOICE OF ANESTHETIC

To the Editor:—*What is the anesthetic of choice in a case of premature separation of the placenta with profuse bleeding? We have discussed this matter in our staff conferences but have not come to any definite conclusions. It was pointed out that local infiltration for cesarean section takes too long.*

Anthony J. Sclafani, M.D., Brooklyn.

Answer.—It is assumed from the mention of cesarian section that conditions were not favorable for delivery from below. The choice of anesthetic is the least important factor in this condition. The important points are as follows: 1. Early diagnosis often saves both mother and child. 2. Early use of blood in adequate amounts (several portals of entry and with pressure at times). 3. Prompt notification of the surgery and anesthesia departments to be ready for the procedure. 4. Use of the anesthetic that is most readily available with a competent anesthetist.

One may argue for or against almost any anesthetic agent. One would desire an agent that could be used quickly and with which a generous supply of oxygen could be given. Anoxia is a serious problem in these patients. The baby probably does not deserve too much notice here, because the amount of separation of the placenta with the resulting anoxia usually determines the future of the baby.

Many use cyclopropane with or without ether and with oxygen or ethylene with or without ether and with oxygen. Ether and oxygen is a good anesthetic. Spinal anesthesia is not favored by all authorities. The barbiturates such as thiopental sodium might lead to increased anoxia although this might be debated.

ADMINISTRATION OF TETANUS AND DIPHTHERIA ANTITOXINS

To the Editor:—*Please outline a standard method of administering diphtheria antitoxin (1,000 units) and tetanus antitoxin (1,500 units) in persons who show a positive skin reaction. What is your recommended procedure for patients requiring therapeutic doses, with positive skin reactions, in cases of diphtheria and tetanus?*

M.D., Texas.

Answer.—With the highly refined diphtheria antitoxin now produced, severe reactions are seldom observed. A specially refined diphtheria antitoxin has been administered to asthmatics without causing unpleasant reactions. However, if the skin reaction is positive, desensitization should be undertaken. The method adopted will depend somewhat on the patient. Ordinarily 0.1 cc. of antitoxin or other serum may be given subcutaneously. If there is no reaction at the end of 20 minutes, then 1 cc. may be injected by the same route; if there is still no reaction after another 20 minutes, it is generally considered safe to inject the full prophylactic or therapeutic dose intramuscularly. Nevertheless, when the patient is known to be asthmatic, greater caution is advisable. For injection the serum may be diluted 1:10 in isotonic sodium chloride solution. Then 0.1, 0.2, 0.3, and 0.4 cc. is injected subcutaneously at 20 minute intervals, provided no reactions occur. Such injections should be given in an extremity if danger of anaphylactic shock is feared, in order that a constrictor can be applied above the site of injection if alarming symptoms develop. Epinephrine should also be immediately available for injection. When any kind of foreign serum is given intravenously, it should be combined with an equal or greater amount of isotonic sodium chloride solution, or 5% dextrose to which 5 to 10 minims (0.3 to 0.6 ml.) of epinephrine have been added. Although it is wise always to make sensitivity tests, negative results are not an absolute guaranty that reactions may not occur. If there is a positive skin reaction to tetanus antitoxin, it is advisable to procure bovine tetanus antitoxin. Otherwise one may adopt the same procedures as for any other serum. The ophthalmic test for sensitivity is not recommended.

LIGATION OF EXTERNAL CAROTIDS

To the Editor:—*Bilateral ligation of the external carotid was done on a patient 65 years old to relieve an uncontrollable, bilateral, recurrent, severe hemorrhage. He had hypertension (over 200). This bilateral ligation immediately controlled the hemorrhage, but, 12 hours after the ligation, a cerebral hemorrhage with paralysis of the right side of the body developed. The blood pressure immediately dropped to 140 systolic and continued to drop. The patient died 34 hours after the bilateral ligation. Does bilateral ligation of the external carotid raise the cerebral arterial pressure and predispose to vascular cerebral accidents?*

M.D., Tennessee.

Answer.—Interruption of the external carotid arteries should not increase the blood pressure in the internal carotid arteries, with resulting increase in cerebral arterial pressure. The cause of hemiplegia in your patient probably was the result of a clot arising in the stump of the left external carotid artery and carried into the cerebral circulation, producing the hemiplegia. Thrombosis following surgical procedures on the carotid arteries is much more frequently the cause of hemiplegia than is ordinarily considered. Given another case such as this, it would be important to make sure that the interruption was exactly at the origin of the external carotid artery, so that there would be little if any chance of a thrombus forming at the site of ligature. Some favor suturing the stump of the external carotid artery rather than ligating it, as this is a better closure with less chance of thrombosis developing.

ENLARGEMENT OF TIP OF NOSE

To the Editor:—*A 43-year-old white married woman, para III gravida III, complains of enlargement of the tip of her nose. The enlargement began several months ago and has gradually increased. At times it seems more pronounced than at others. The patient believes it is apt to be somewhat larger in the morning. It is painless, and there is no history of respiratory allergy. Results of physical examination are not remarkable, except for the blood pressure, which is 186/110. The tip of the nose appears somewhat bulbous, but the skin is smooth and there are no lesions on the nasal mucosa. Could this be a case of rhinoscleroma; if so, what is the treatment?*

John D. German, M.D., Clintonville, Wis.

Answer.—Scleroma is a persistent and progressive, firm, indurated lesion that usually involves some of the mucous membrane of the nose. The diagnosis is established by biopsy, and treatment is with antibiotics of the streptomycin series. From the description given, however, it is not likely that this woman has scleroma. A lesion such as is described in this case could be a manifestation of a fixed drug eruption, angioneurotic edema, rosacea, or solid edema. The latter is a recurrent erysipelas-like eruption, usually due to infections that enter through minute fissures in the mucous membrane. It, too, should be treated with antibiotic agents before the tissue becomes organized.

POST-THORACOPLASTY PAIN

To the Editor:—*A man, 41, had tuberculous meningitis a year and a half ago and was treated with streptomycin. Afterward, because of a cavity in the left lung, he had four stages of thoracoplasty, three behind and one in front. He also had a phrenicotomy. After six months at a tuberculosis hospital, he came home with a negative sputum. In the last seven months he has had pain in the area of the left lower ribs. The pain has a pulling and drawing sensation in the axilla. The pain is so severe that he needs narcotics. He is very restless. I would be grateful for suggestions as to what can be done.*

Michael Rabe, M.D., New Bremen, Ohio.

Answer.—Pain is complained of not infrequently by patients after major chest surgery. Sometimes it is confined to the track of the incision, but more often is related to one of the intercostal nerves which has been injured or involved in suturing. In the case under discussion it seems that the trouble may be with the second intercostal, which is different from other intercostals. The lateral cutaneous branch of the second intercostal nerve does not divide into anterior and posterior branches as do the other intercostal nerves. It remains a large single trunk, known as the intercostobrachial nerve, which pierces the intercostal and serratus anterior muscles and traverses the axilla to the medial side of the arm. A second intercostobrachial nerve is frequently given off from the lateral cutaneous branch of the third intercostal. These two nerves supply cutaneous branches to the axilla and medial side of the arm. The branch from the third intercostal particularly supplies the axilla and lateral chest wall. They are particularly vulnerable to injury during the performance of first-stage thoracoplasty, especially if care is not exercised in stripping the periosteum of the second and third ribs. It is possible, also, to include one or both of these nerves in a suture while securing bleeding points. This accident may account for post-thoracoplasty pain especially in the axilla, lateral chest wall, or medial aspect of the arm. Treatment should be directed toward the relief of pain without excessive use of narcotics; physical therapy methods and psychotherapy should be employed. Pain is usually self-limiting and will gradually subside, although this may take several months or more in some instances. The patient should be treated sympathetically rather than as a problem case. Resort to neurological surgery should be delayed as long as possible. ost patients will recover without it.

ACTIVE IMMUNIZATION DURING PREGNANCY

To the Editor:—*In the absence of epidemics or specific exposure but in consideration of civil defense precautions, is it advisable to promote active immunization of pregnant women to typhoid, tetanus, and smallpox?*

Warren L. Jones, M.D., Santa Ana, Calif.

Answer.—It is not advisable to promote active immunization of pregnant women for typhoid, tetanus, and smallpox in the absence of epidemics, the threat of epidemics, or specific exposure. There is some hazard to the mother and fetus, although it may not be great. Febrile reactions are commoner in pregnant than in nonpregnant women. Saramo reported that inoculations for typhoid during the first half of pregnancy have resulted in violent reactions and abortion. Immunizations have been implicated in poliomyelitis, and there is clinical evidence in recent epidemics that the incidence of poliomyelitis in pregnant women was appreciably higher than in the general population.

VITAMIN A IN ALLERGY

To the Editor:—*Is there any justification for vitamin A therapy in an allergic six-year-old child? If so, what is the correct dosage? Allergy has not been definitely established by tests.*

George C. Christie, M.D., Canon City, Colo.

Answer.—The use of vitamin A to combat allergy arises from the function ascribed to this vitamin of keeping dermal and mucosal tissue in a normal state. For the same reason, vitamin A has been used for the prevention of the common cold. In the experience of many allergists, the use of vitamin A has offered little encouragement.

INJECTION TREATMENT OF HERNIA

To the Editor:—*Please compare the merits of the surgical an injection treatments of inguinal hernia. Is the patient amb latory throughout the injection treatment? Is this treatmen cheaper? My own opinion is that, in the great majority o cases, the injection treatment is inferior and unpredictable a to result.*

W. R. Foster, M.D., Pittsburgh.

Answer.—The injection treatment of inguinal hernia, or an other hernia, has not withstood the test of time, all later obser vations showing an exceedingly high rate of recurrence. Th injection treatment is not based on sound principles of repair The hernial sac is still present, and the scar tissue produced b the injected material usually disappears after a time, all of whic preclude satisfactory results. Patients receiving the injectio treatment are ambulatory, and this treatment should be cheaper These, however, are irrelevant factors when one considers th the hernia will not be cured.

COMBINED ESTROGEN AND ANDROGEN THERAP

To the Editor:—*I wish to take issue with the answer to th query on "combined estrogen and androgen therapy" in* Th Journal, *Oct. 13, 1951 (page 707). My experience in the pa nine years with such mixtures has been wholly satisfactor*

The side reactions cited in The Journal *usually follow u necessarily large doses of the mixture for unduly long perio of treatment. The dosage schedule outlined in our report GP (***3***:39 [March] 1951) will rarely induce such complication Endocrine therapy in general is frequently misused. This a lies no less to the use of the sex hormones singly or in con bination. Unfortunately some current commercial prepar tion (but not "test-estrin," cited in* The Journal*) of estroge androgen are too potent for long-term therapy of th climacterium.*

I believe the many distinct advantages (J. Clin. Endocrino **10**:*1616 [Dec.] 1950) inherent in combined estrogen-androge therapy should not be ignored or discredited because of th abuse rather than the proper use of this valuable hormon mixture.*

S. J. Glass, M.D.
360 No. Bedford Dr.
Beverly Hills, Calif.

URINARY INFECTION AMONG TRUCK DRIVERS

To the Editor:—*On page 910 of* The Journal *of Oct. 27 1951, is a question regarding urinary infection among truc drivers. The answer is correct as far as it goes. Howeve the commonest cause of acute and chronic urinary infection in the young age group of men mentioned is prostatitis, t which truck drivers, railroad engineers, traveling salesme and bus drivers are subject. Perhaps the constant poundin of the perineum in the commercial type of vehicle migh account for this.*

The simplest way to determine whether the patient has pro tatitis is to examine the prostate per rectum and this shou have been commented on by the physician who answered th question.

Norborne B. Powell, M.D.
801 Hermann Professional Bldg.
Houston, Texas.

DISTRESSING GAS DURING PREGNANCY

To the Editor:—*In* The Journal, *Oct. 20, 1951, page 79 there was a query about "Distressing Gas During Pregnancy." In 20 years of obstetrics I, too, have frequently encountere this complaint, and I have informed the inquirer of my trea ment: liquid taka-diastase® (digestive enzyme agent), 4 8 cc. immediately after meals.*

H. J. Lukeman, M.D.
Chief, Obstetrics and Gynecology
U. S. Naval Hospital
Portsmouth, N. H.

THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 5 CHICAGO, ILLINOIS FEBRUARY 2, 1952

COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION

BASIC PSYCHIATRY IN MEDICAL PRACTICE

John C. Whitehorn, M.D., Baltimore

The practice of medicine is one of the fields of human endeavor most markedly modified from time to time by the progress in basic sciences. Revolutionary changes in medicine were brought about by the development of bacteriology and sanitary engineering. That revolution preceded the active careers of the present generation of physicians; but we of this generation have witnessed and participated in a great change produced by the development of chemotherapy and the antibiotic drugs. The net results of accumulated scientific gains have been a much greater effectiveness in the treatment and prevention of acute infectious disease, and a considerable lengthening of the average span of life, with a change in the types of distress and disability for which medical aid is sought. The physician's practice, whether general or specialized, has come to include a larger and larger proportion of more chronic illness. Bit by bit, radical advances are being made in these fields also—as in the better management of diabetes and in the treatment of thyrotoxicosis. Yet there is a large and increasing proportion of those illnesses, or conditions of marginal poor health, in which modifications in the patient's way of life constitute a major concern of the physician. This requires some skill in dealing with patients as persons, yet, until recently the course of training for a career in medicine gave little or no instruction or guidance in dealing with patients as persons.

Psychiatry has special pertinence for this aspect of medical practice for three reasons:

First, because a considerable segment of the problems of chronic ill health is made up of frank mental and emotional disease—the psychoses and the neuroses. Second, in a considerable proportion of cases, emotional maladjustments and bad habits of thinking and feeling definitely participate in the production of morbid tissue pathology—the so-called psychosomatic conditions. Third, many illnesses, which are not in themselves psychotic, neurotic or psychosomatic, require for their proper management modifications in the pattern of life adjustment and modifications in patients' attitudes—a task of adaptation that may strain the personality resources of many patients, or arouse definite and obstinate noncooperation, whose management requires of the doctor some psychiatric knowledge and skill.

I wish that I, as a representative of psychiatry, could report that psychiatry, as a clinical specialty and as a basic medical science, stands ready and able to solve the practical problems raised by these three points; but the distressing fact is that we in psychiatry are only partially prepared, either to perform these tasks in a fully satisfactory manner or to teach others to do so. Let me acknowledge this state of imperfection and inadequacy promptly and frankly, to forestall misunderstanding; for my main purpose today is to discuss some of the points at which present day psychiatric knowledge and teachable skills have value and pertinence to those problems of modern medical practice, and I do wish, earnestly, to guard against appearing to claim too much for psychiatry. An appreciation of the needs for better psychiatric knowledge is, however, attracting an increasing number of able young physicians into this field of study. Some lines of potential advancement are becoming clearer. If support can be furnished on an increasing scale, progress in psychiatry will enable physicians to meet those needs more adequately.

What does psychiatry now have to offer that is significant for general medical advancement in these three fields that I have outlined? As a teacher in a medical school, I face this question primarily as a problem of medical education for those newly entering the medical profession.

How do things shape up for the successful teaching of psychiatry as a basic medical science? One could say that psychiatry is now being added as another chapter of physiology, dealing with the personality functions. Such a statement, while true, is deceptively simple. The practically useful ways of approaching the study of personality functions are very different in methodology from the rest of physiology. Personal goals and ambitions, interpersonal attitudes and sentiments are the funda-

---

Psychiatrist-in-Chief, Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital.

Read in General Scientific Meetings at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 12, 1951.

Presented in part at the meeting of the Peripatetic Club, Johns Hopkins Hospital, Feb. 2, 1951; and given in part as a clinical address, Guy's Hospital, London, Sept. 20, 1948.

mentally important matters in the study of personality functions. Methodology suitable for such matters is not being taught in physiology. With due humility for methodological imperfections, we may properly consider, however, that personality functions do constitute a part of physiology, in a broad sense, and it is in this sense that I speak of psychiatry as a basic medical science.

As I see it, the preparedness of psychiatry to fulfill this new role in medical education, as a basic science of human nature, depends essentially on the validity and usefulness of that part of psychiatry which we may call "psychodynamics." The term psychodynamics in its most general meaning should perhaps include the whole body of knowledge about biological and social forces which in psychological ways influence personal behavior, but the term is usually used in a more restricted sense, with a special focus on certain intermediary psychological processes, such as interpersonal attitudes, repressed desires, and emotional conflicts.

For the sake of perspective, let us consider, even though it must be in haste, the historical development of psychodynamics within the specialty of psychiatry. For this purpose psychiatric study may be characterized at three levels: (1) descriptive, (2) epithetic, and (3) thematic.

All medical men have some acquaintance with descriptive psychiatry, which means the detailed scrutiny of individual patients for the detection of pathological items of behavior and the orderly grouping of the pathological pictures so disclosed into syndromes or disease entities. This level of psychiatric study was epitomized in the life work of Emil Kraepelin, especially in his descriptions of manic-depressive psychosis and dementia praecox.

It was at one time generally assumed that the tasks of description and classification would be the preparation for discovering the organic or toxic etiologies of the entities described. The paradigm, or pattern of thought and expectation, was provided by dementia paralytica (general paresis), which is organically meningoencephalitis, caused by the spirochete of syphilis. There has been considerable advance in the knowledge of dementia paralytica, in the certainty of its diagnosis and in the methods of treatment. The greater certainty of diagnosis of syphilitic meningoencephalitis has, however, brought with it knowledge that compels a considerable revision of the expectation that there would be found a specific organic etiology for each describable pattern of pathological behavior. The clinical picture formerly thought to be typical and characteristic of dementia paralytica—the expansive, grandiose picture—is actually manifested by fewer than half the cases. Depressive or neurasthenic patterns of reaction actually outnumber the grandiose. We now know that practically any one of the known pathological reaction patterns can be found in patients with syphilitic meningoencephalitis. The differences in the pattern of pathological personal reaction, with the same organic etiology, have been attributed to differences in personality.

As in this example, so also in many others, psychiatry has been busy with the task of distinguishing different types of personality. Morphological correlates of personality differences have been sought, with many errors and with some successes. The physical stigmas of degeneracy was one of the false leads; the pyknic-asthenic contrast in body build has been found to be a moderately useful index to differences in personality.

In clinical psychiatric practice today, the clinician customarily carries about with him a certain stock of adjectives—terms such as introvert, extravert, schizoid, syntonic, seclusive, obsessive, and paranoid, by which one can characterize personality, still within the bounds of normal diversity but predisposing to the development of fairly specific pathological reaction patterns if something happens to precipitate a psychosis or a neurosis. These adjectives for characterizing personality represent a level of psychiatric study one step higher than the mere descriptive pathological characterization of the clinical picture. It is this level of interest in personality that I have called epithetic. Now an epithet implies disapproval, and I use the term intentionally, because it has seemed to me that these characterizations of personality have very commonly been made in a spirit of some hostility or disparagement, as exemplified in the pseudoscientific epithet "psychopathic personality, S. O. B. type."

Let me hasten now to consider the next higher level of psychiatric study—the thematic level, at which one is concerned with the themes or issues with which patients are struggling. At the thematic level of study one seeks to penetrate beyond the merely descriptive formulation of the pathological pattern of reaction, even beyond the epithetical characterization of the patient's personality, and arrive at an appreciative personal understanding of the patient's reaction, as a form of human behavior pertinent to certain themes or issues. In a figurative way, it sometimes appears as if the patient who manifests a psychosis, a neurosis, or an uncooperative attitude had turned aside from the main struggle of life in an intensive preoccupation over a disturbing side issue, internalizing some conflict with others in the environment and struggling introspectively with this internalized issue or externalizing some inward moral struggle and projecting it onto others. At this thematic level of psychiatric study, one must somehow come to grips with motives and attitudes in their personal meanings for individuals, and it is this study that has stimulated the development of psychodynamics. With the growth of psychodynamics, at the thematic level of psychiatry, the narrowing course of specialist psychiatry has broadened. Psychodynamic concepts and methods of study have wide applicability in general medicine, in dealing with patients as persons, and in dealing with personal problems as factors in disability and distress.

I have wished to make it clear, by these remarks, that there need be no antagonism between those interested in psychodynamics and those interested in descriptive psychiatry, in organic determinants of psychiatric illness, or in hereditary predisposing factors. So long as a patient remains alive and struggling toward some goal, psychodynamic considerations have some pertinence. The clinical psychiatrist has to take all those aspects into consideration. Their relative importance varies with the case.

In the development of psychodynamics, sex has received a lot of attention. Sigmund Freud, in his studies of hysterical reactions by the methods of hypnosis and of free association, disclosed many evidences that in such illnesses repressed sexual impulses play an active, dynamic role in motivating behavior in ways previously unsuspected. He was led thereby to formulate an extraordinarily simple schema of motivational dynamics, on the assumption that sexual interest was the principal, if not the sole, motivating force. Certain elementary psychodynamic mechanisms, such as repression, displacement, projection, and rationalization, were initially worked out in terms of this libido theory. There was considerable resistance to these earlier psychodynamic formulations of Freud, in part because the exclusive emphasis on sex seemed a ludicrous oversimplification of human nature, and in part because there was a widespread attitude that sex was a rather nasty business and that the libidinal theory gave a degrading view of humanity. In the historical perspective of half a century it has become evident to nearly all, however, that Freud's observations and theories contributed a powerful impetus to the study of unconscious motivation which has been fundamental to the development of psychodynamics on a broader basis.

Freud had a talent, also, for borrowing, from the general cultural heritage, forms of expression for the dramatic presentation of his dynamic concepts. The theme of incestuous wishes was presented as the "Oedipus complex." In the deep psychoanalysis of many patients, something approximating the Oedipus complex came to light. It became so commonplace a finding that most psychoanalysts came to assume that the Oedipus complex is a childhood phase in the development of everyone. During the early period, when the emphasis was on the bluntly incestuous aspect of the Oedipus complex, many nonanalytical psychiatrists remained skeptical of its generality. As the aggressive component in human nature has received more and more attention in the study of psychodynamics, the Oedipus complex has become a more generally acceptable concept. It is a convenient term for designating an early phase of personality development in which the child feels and expresses resentment and hostility against one of the parents. Since the bringing-up of children inevitably involves many frustrations, children have occasions for developing resentments and aggressive impulses against the frustrating parent. Aggression against a parent was one of the outstanding features of the original Oedipus Rex story. Freud's choice of the Oedipus story for epitomizing incestuous wishes has served therefore as a kind of conceptual bridge between his early libido theory of psychodynamics and the later recognition of aggression and of other motivational dynamics. It is a fortunate choice of metaphor, indeed, which provides the means for its own constructive modification.

These references to the Oedipus complex point up the fact that efforts to formulate scientific hypotheses about psychodynamics turn out to have close parallels with concepts familiar in humanistic arts and letters. I presume that in the world's great storehouses of art and literature most of the themes of human aspiration and striving are represented. Much of the knowledge of human nature that has been artistically formulated exists as proverbs or aphorisms or myths, like Oedipus Rex or Narcissus, which catch one facet of human nature and highlight it. Another proverb or myth may highlight another facet of human nature, almost the exact reverse. Wisdom lies not in the proverb but in the good sense by which one can judge which proverb applies to a particular situation.

In the attempt to develop a scientific schematization of human nature that would be solid and dependable—not so shifting as proverbs or myths—the psychoanalysts have fixed upon the concept of instinct. This was doubtless one of the considerations that recommended sex as a foundation stone for theoretical psychodynamics. Sex behavior was seen to have an obvious biological necessity and seemed to lend itself fairly well to formulation as an instinct. It is of some historical importance, also, that Freud's formative years were in the post-Darwinian period, when the biological aspect of human nature was receiving intense attention. The concept of instinct provided a biological link between mankind and other animal species. Later, McDougall attempted to outline a psychodynamic scheme of human motivation and behavior in terms of some 14 instincts and their modifications, as the conceptual foundation for the social psychology of man. Social anthropologists demolished the foundations of McDougall's system by overwhelming evidence that the actual human behavior patterns are determined by culture rather than by instinct. It would, in my opinion, be a forward step if we could eliminate the word "instinct" from psychodynamic formulations, because the original hypothesis has had to be so markedly altered. Yet the basic biological orientation of psychology which was implied by the term "instinct" or "triebe," as used by Darwin, Freud, and McDougall, has helped us to escape many of the scholastic quibbles about the nature of the human mind and to direct attention to the biological functions indicated by the word "mind."

From the biological or functional view, the word "mind" appears primarily as a verb, rather than a noun. "Mind" denotes certain functional activities of an organism rather than a metaphysical entity. These functional activities are aimed toward the fulfilment of needs and have therefore a futurity-oriented meaning or purpose, although the awareness of the need may be very dim. It has been of primary importance, in the development of psychodynamics, to recognize that human life is characterized by this orientation toward the future. It is impractical for one human being to try to understand another human being in complete disregard of the purposes or aims toward which one's efforts are directed. It would also be impractical to assume that every person is fully aware of the goals toward which he exerts himself and could give an adequate account of his motivation. Much remains unconscious and becomes manifest, if at all, only by implication. The psychoanalytic method of studying the unconscious through the free-association technique has contributed a great deal toward a deeper understanding of motivation in general. Personal experience with psychoanalysis may also contribute toward the development of a given person's skill in discerning from brief contacts the motivational patterns in a patient's life. It is by no means necessary, however, for every medical man to have psychoanalytic training in order to do a decent job of sizing up the attitudes and emotional problems of his patients. Common sense and a certain practical knowledge of life can take the experienced physician a long way in the task of comprehending patients' personal problems, once the physician has gained an appreciation of the medical importance of motivation and of the emotional problems and possible physiological disturbances involved in motivational conflicts. Even the medical student, although his direct experience of life may be somewhat limited, can bring a good deal of practical sense to the task of evaluating a patient's emotional adjustment and his patterns of motivation, once he is oriented to think seriously and professionally about the matter. Furthermore, when the student has reached the stage of clinical work, the rich case material in the hospital wards and outpatient services provides him wonderful opportunities for studying the adaptive and maladaptive behavior and attitudes of many kinds of men and women, under a variety of social pressures and personal biases.

Students usually feel somewhat awkward and insecure in making use of these opportunities to study personality. All too often they fall into the easy routine of formal history taking and formal physical examination, and get very preoccupied in the busyness of tests and special examinations. There is such an infinity of tests in these days that the student could easily devote all his time to the apparatus and technique of medicine and forget that the patient is a person. From my acquaintance with medical students, I would say, however, that many of them have genuine interest in patients as persons and have a good deal of intuitive appreciation of human nature. In submitting to the technological pressures on their time, they submit with regret. Some even persevere in their interest sons, and some of these seek guidance from experts ychological medicine to help them reach a better derstanding of the patients. It is at this point, as I have implied before, that a knowledge of psychodynamics enables the phychiatrist to guide the student, in a really helpful way, to a working understanding of patients who are having difficulty in personal problems. Concretely, this means that the expert in psychological medicine should help the student learn to do good personal interviewing, to talk with patients in sufficient freedom to bring out the patient's attitudes and his sense of values. The student usually needs further help in making out the meaning of the patient's statements and behavior and in integrating his interview material into a formulation that may make further interviews meet the patient's personal needs.

They do need help in developing skill in interviewing. In learning about interviewing, students usually want some sort of guide or outline to habituate them to covering the "main points," and students may be helped by a temporary crutch for this purpose, but one of the principal needs later is to liberate the interview from any stereotyped constraints. Only in a fairly free-flowing interview do the unconscious attitudes of the patient get clearly manifested. The free type of interview, as contrasted with fixed pattern, also stimulates the student to bring into play his own common-sense judgment and his considerable store of intuitive understanding.

One source of grave errors and of frequent errors in the intuitive, or naive, approach to psychodynamics can be stated fairly simply. The physician or student reads himself into the patient and assumes that the patient is motivated in the same ways as he is. In many instances this leads to false interpretations and misunderstandings. I the physician or medical student did really have thorough understanding of himself, this tendency woul not be so productive of mischief, but unfortunately physicians and medical students share in the general huma tendency to dramatize themselves to themselves in flattering ways and therefore commonly misconceive thei own motivations. Let us call this the projective error.

The projective error contains, then, two factors: first the error in trying to understand a diversity of patients personalities by reference to the really rather limite range of one's own attitudes, prejudices, and conflicts second, the misconception of oneself that is intuitivel employed as a basis of reference.

The most useful general corrective to this common an grave source of error is found in the systematic study o the process of personality development. I had the opportunity during the recent war to observe the work of number of military psychiatrists. There was, of cours considerable diversity in their practical grasp of psychodynamic considerations and therefore in their capacitie for prompt psychotherapeutic assistance. One could observe a general superiority, in these respects, of the me who had had considerable training in child psychiatr I believe that this correlation was not an accident. A understanding of the development of personality durin childhood helps the physician to avoid the pitfall of expecting people to be motivated in a wholly mature pattern. This in turn helps him to be realistic, rather tha irritated, when patients do not live up to fully adult expectations.

There are several ways in which one may designate th progressive steps toward maturity of personality. It is o great practical value to the physician to have some fairl definite ideas regarding these stages of immaturity. Man morbid anxiety reactions would remain quite enigmatic or would be seriously misunderstood and mistreated if the physician did not allow for the patient's emotional immaturity. A person may be intellectually or economically very successful, yet remain childishly dependent on a mother or mother substitute for maintaining emotional security. Others may continue far into adult years the strenously competitive and exhibitionistic attitude of early adolescence. If the physician, trying to understand the anxiety of a middle-aged man, fails to recognize a persisting adolescent overemphasis on prestige symbols the meaning of an anxiety reaction may be completel missed.

The early psychonanalysts developed a set of terms for characterizing stages of psychosexual development roughly stated as oral, anal, oedipal, phallic, and genital. These terms have not been very useful to the physician without psychoanalytic training, because the criteria depend in considerable measure on uncovering unconscious trends through the methods of free association and dream analysis. Such data when obtainable may provide a delicate index of immaturity levels, very convenient when psychoanalysts communicate case reports with each other but not always clearly intelligible to the uninitiated

LEVELS OF IMMATURITY

For more general purposes I have found it useful t delineate a series of stages of personality developmen having special reference to the sense of personal respon sibility in interpersonal relationships. Four levels of immaturity can be roughly blocked out and conveniently labeled infantile, childish, early adolescent, and late adolescent. The stages or levels are named in accordance with certain attitudes that characterize successive periods in the growth of a normal and eventually mature personality, but the terms and concepts are intended to be used principally for understanding persons who are chronologically and physically grown up but emotionally have remained at one of these immature levels or in their illness have returned to it.

Infantile Level.—At the infantile level, one expects from others a limitless amount of service and consideration, without any automatic feeling of reciprocal obligation. This attitude was most clearly, though paradoxically, expressed by one of my patients when she said, "I'm no baby; I know what I want; and I want what I want when I want it." The outstanding emotional need at this level is for affection or attention.

Childish Level.—At the childish level, there has developed some sense of responsibility, but it is a delegated responsibility of the kind that is completely erased by a good excuse. The alibi habit is the characteristic expression of this stage. Great circumstantiality in speech is a useful clinical clue. Persons at the childish level of immaturity expect thorough reliability in others but only formal effort, up to the "excused" level, in themselves. They may expend much more effort in framing acceptable excuses than might be required to get a job done. Obsessive scrupulosity is a substitutive way of establishing merit, rather characteristic of this level. Praise or blame are the focus of attention. The great emotional need of the childish level is for security, characteristically sought in attachment to others—older or more powerful persons who may appear reliable and interested.

Early Adolescent Level.—At the early adolescent level, exhibitionism and prestige-seeking are the outstanding manifestations of a strong push to gain personal significance, and to sustain it by repetitive demonstration. The striving for self-sufficiency requires extrafamilial supports, and those are characteristically found in idealistic hero worship and in gangs. Badges and trophies have high value as demonstrable symbols of prestige. The sense of group responsibility develops at this level, limited in range to the gang or even more limited to one's buddy, but rather fanatical in its intensity. The great emotional need at this stage is for assurance as to personal significance, rather than simply affection or security. Now personal significance can show off only in a social setting. It can never be wholly individualistic. There is therefore at this level a correlated growth of social sense expressed in personal loyalty or small group loyalty.

Late Adolescent Level.—The late adolescent level is the stage of -isms—romanticism, idealism, or cynicism, for example. The sense of social responsibility has become more generalized in the form of loyalty to a cause, as well as to a person or group. The tendency to excess is still present, as in earlier adolescence, but it is doctrinnaire excess rather than physically strenuous excess. The pseudosophisticated "line" of talk, the "wise-crack," and the sophomoric savant are easily recognizable manifestations. Sexual interests are expressed in pairing off and in courtship behavior, but success in that field, or the anticipation of success, has the emotional quality of a conquest rather than of mutual devotion.

ADULT LEVEL OF MATURITY

The adult level of personal maturity is difficult to characterize, but not too difficult to recognize. It is manifested in a balanced perspective regarding oneself and one's life and work in relation to others. The mature person can examine and appreciate the views and attitudes of others without feeling threatened thereby in one's own self-assurance. The social needs for affection, security, and significance characterizing immature stages are not outgrown in the mature adult, but the means to their satisfaction have been found in a fairly wide range of personal relationships. The emotionally mature adult is not fixed in a stereotyped pattern but can handle a number of social roles and can shift for himself from one to the other role without paralyzing constraint or anxiety.

COMMENT

The foregoing brief comments on the infantile, childish, early adolescent, and late adolescent levels of personality development have been worked out clinically, and presented here, not by any means for the mere purpose of having a scale on which individual specimens can be pinned down at the appropriate level. The whole intention is to aid the physician to comprehend and formulate the motivational level of maturity of each patient, so that his remarks and his plan of management and treatment can tie in constructively with the patient's system of values.

In the strategy of psychotherapy and in the management of patients, one has to recognize the psychodynamic principle that personality growth is stepwise. If one deals with a childish personality and some progress in maturation does occur, one can expect that the characteristic themes and issues of adolescence will next arise and have to be worked through before one can expect full maturity.

A word of caution in regard to these levels of maturity. I have found by experience that young physicians, learning to study their patients in these terms, tend to slip into the use of the terms as epithets, regarding the patient as childish, or infantile, or adolescent, in a too accusatory fashion. The principal value of this aspect of attitude study is thereby ruined, for its principal value is to help the physician appreciate the patient's set of values and his preferred role in the system of interpersonal relationships.

The physician who can recognize and evaluate with reasonable correctness the personal attitudes and level of emotional maturity of his patient, and their bearing on the management of his illness, will have gained thereby a positive contribution to his competence in general medicine. This appreciation of attitudes does not exclude organic pathology, nor does it depend on the diagnosis of a functional disorder by exclusion of organic lesions. Even when the patient's attitudes are pathognomonic of one of the classical psychoneuroses, it is still important to know whether he has some organic disease. Hypochondriasis does not immunize to cancer, nor does hysteria immunize to brain tumor. Conversely, the discovery of ulcerative colitis, of mitral stenosis, of undulant fever, or even of an obvious hernia does not of itself eliminate from medical consideration the attitudes and patterns of personality reaction which may be the factors hindering treatment, or limiting recovery, or impelling the patient toward an unnecessary and miserable second-rate invalid adjustment in life. For the diagnostician to miss an organic lesion has been, quite properly, an occasion for some professional disgrace; now, with a more widespread understanding of the emotional forces that produce ill health, with a knowledge of how to examine for pathological attitudes and reactions, and with an increased appreciation of psychotherapeutic resources, it should become a comparable professional disgrace to overlook disturbances of personality functions that may be of crucial importance in producing or prolonging ill health.

CONCLUSION AND EXTENSION

Medical practice has been greatly changed by major triumphs over infectious disease through bacteriological study, sanitary engineering, chemotherapy, and the antibiotic drugs. The span of life has been lengthened. Chronic disease and marginal conditions of persistent ill health now demand a larger share of medical attention and require from the physician greater understanding and skill in dealing with human nature. In the necessary task of aiding individual patients to adapt to stress, to modify their ways of living, and especially to resolve more effectively the internal emotional conflicts that spoil life for so many unfortunate persons, the modern physician needs something that traditional medical education and training have not provided.

Psychiatry has found some answers and has developed some methods of studying human nature that offer possibilities for physicians to work out better solutions to some of these problems.

Modern medicine has become a fearfully complicated procedure, depending, however, in the ultimate analysis, on the trained good sense of the individual practitioners, and limited by their limitations. In this paper, and in working day by day to make psychiatry more useful as a basic medical science, I have not wished to complicate medicine in any unnecessary degree, but, instead, to focus attention on the most crucial points for the application of practical psychodynamic understanding.

610 N. Broadway.

PYOGENIC INFECTIONS TREATED WITH NEOMYCIN

Clarence S. Livingood, M.D., Samchai Nilasena, M.D., William C. King, M.D., Rufus A. Stevenson, M.D.
and
J. Fred Mullins, M.D., Galveston, Texas

Neomycin, discovered by Waksman and Lechevalier [1] in 1949, is an antibiotic which is produced by a strain of Streptomycetes closely related to Streptomyces fradiae. It is a basic compound, heat stable, and freely soluble in water. It does not lose its potency in watery solution or, indeed, in any type of vehicle, which is in striking contrast to many other antibiotics which are available for the topical treatment of cutaneous pyogenic infections.

The laboratory work of Waksman and Lechevalier [1] and that of other investigators [2] indicated that neomycin is bactericidal in vitro against an unusually wide variety of both gram-negative and gram-positive organisms. Furthermore, in their original article on neomycin, Waksman and Lechevalier [1] reported that bacterial organisms did not appear to become resistant to the antibiotic, as often happens with streptomycin in particular.

Waisbren and Spink,[3] Carr and Brown,[4] Duncan and others,[5] Wolgamot and Duncan,[6] and Lazar and Fishman [7] have reported on the parenteral administration of neomycin in the treatment of various types of systemic infections, including tuberculosis and infections of the urinary tract, especially those due to Proteus and Pseudomonas.

The series of cases reported by Waisbren and Spink [3] included 63 patients. They stated that infections due to Proteus organisms and to other gram-negative bacilli were favorably affected by the antibiotic, but in summarizing their findings, they stated that, "In view of the ototoxic and nephrotoxic effects of neomycin, this drug cannot be recommended for general use." Most of their patients received 2 gm. of neomycin daily. The seven patients who had tuberculosis were not benefited by the therapy.

Carr and Brown [4] reported that partial deafness occurred in four of their six tuberculous patients who received neomycin, this complication appearing during the fourth to the sixth week of treatment. The deafness persisted without change after the discontinuation of neomycin administration. Also, they noted temporary damage of renal function in all of their six patients. On the other hand, Duncan and others [5] reported evidence of toxicity in only 1 of their 10 patients with urinary tract infections who received neomycin. This patient had impairment of hearing and an increase in blood urea nitrogen; his hearing improved after neomycin therapy was discontinued, but the blood urea nitrogen values remained high. They stated that neomycin was dramatically effective in eradicating sensitive organisms from the blood and urinary tract, and they did not observe return of the organisms after cessation of therapy. It should be noted that their patients received neomycin for only five to seven days.

With the technical assistance of Elizabeth Spoor, M.T., and Rose Marie Sautter, B.A.

From the Department of Dermatology and Syphilology (Dr. Livingood, Director), University of Texas School of Medicine.

The neomycin sulfate powder and neomycin ointment "myciguent" used in this study were supplied by the Upjohn Company, Kalamazoo, Mich.

Read before the Section on Dermatology and Syphilology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

Dr. M. Allen Forbes, M.D., assisted by following some of the patients who are included in this study, and valuable advice and assistance was supplied by Frank Engley, Ph.D., Associate Professor of Bacteriology, University of Texas School of Medicine.

1. Waksman, S. A., and Lechevalier, H. A.: Neomycin, A New Antibiotic Active Against Streptomycin-Resistant Bacteria, Including Tuberculosis Organisms, Science **109**: 305 (March) 1949.

Poth and his associates [8] have reported on an extensive experience with the oral administration of neomycin for intestinal antisepsis. He used a dosage of 1 gm. of neomycin sulfate orally every four hours. After neomycin therapy, the stools became odorless, semisolid to fluid in consistency, and greenish in color. The concentration of neomycin was determined in the blood, urine, and feces after the patient had been on the antibiotic for three days. The blood levels were extremely low with a maximum of 3 γ/ml. of serum. Quantitative urine assays indicated that approximately 3% of the ingested antibiotic was excreted by the kidneys. The quantity of neomycin in the feces was so high that accurate numerical values were impossible. They concluded that neomycin alone was found to fail in only one respect in that it occasionally did not inhibit the growth of Aerobacter aerogenes. Therefore, they added phthalylsulfathiazole (sulfathalidine®) to the treatment regimen with a dosage of 1.5 gm. every 24 hours. They found that only a small amount of neomycin was absorbed from the gastrointestinal tract, and therefore they concluded that even in a person highly sensitive to neomycin, serious toxic damage would not be expected to occur.

The only report regarding the topical use of neomycin which has appeared in the literature to date is that of Kile and others [9] who stated that neomycin ointment (5 mg. per gram in a water-miscible or a grease base) was effective and well tolerated in a group of over 200 patients with various pyogenic skin infections. In this preliminary report, they came to the conclusion that the results with neomycin ointment were, in the majority of instances, superior to those obtained with preparations which they had used previously.

The study here reported concerns the evaluation of neomycin as a topical therapeutic agent in the treatment of 264 patients with various types of cutaneous pyogenic infections. After reviewing the available literature, it seemed to us that the preponderance of evidence indicated that the nephrotoxic and ototoxic properties of neomycin precluded its parenteral administration, except perhaps in extremely ill patients with systemic infections which had not responded to other therapeutic agents, and therefore only one of our patients received neomycin parenterally.

METHOD OF TREATMENT

The vast majority of the patients included in the present study were treated with (1) an ointment consisting of 5 mg. of neomycin sulphate per gram in an ointment base which is a mixture of petrolatum and lanolin ("myciguent"), or (2) an aqueous solution of neomycin sulphate with a concentration of either 1 mg. or 5 mg. per cubic centimeter, or (3) neomycin sulphate incorporated in a water-miscible base (5 mg. per cubic centimeter) was used in the treatment of 48 patients. The water-miscible base is composed of a mixture of methylparaben, propylparaben, sodium lauryl sulphate, polethylene glycol (carbowax®) 1500, cetyl alcohol, spermaceti, petrolatum, and triple-distilled water. Other vehicles which we have tried include a carboxymethylcellulose base, neobase® (a greaseless ointment base), and a bentonite lotion. In a few patients, the concentration of neomycin either in aqueous solution or in one of the lotion vehicles or in neobase® was increased to as much as 30 mg. per cubic centimeter or gram.

Patients were instructed to apply the ointment from three to five times daily. The aqueous solution was used either in the form of soaks or compresses, with instructions to carry out the treatment for one-half hour either two or three times daily. When feasible, as in the treatment of lesions of the extremities, the ointment was covered by a bandage, and in some patients before bandaging, cellophane was used to cover the involved part after the application of the ointment.

Bacterial cultures were done in almost all cases, and numerous repeat cultures during and after treatment were done in some patients. The in vitro sensitivity of the organisms to neomycin as well as to other antibiotics was determined in a representative group of patients.

RESULTS

TABLE 1.—*Topical Treatment with Neomycin of Cutaneous Pyogenic Infections*

Diagnosis	No. of Patients	Results: Excellent	Fair	Questionable	No Effect	Reaction to Treatment
Impetigo contagiosa	30	29	0	1	0	0
Impetiginized dermatitis *	48	45	0	3	0	3 †
Ecthyma	7	5	1	1	0	0
Paronychia (acute)	5	4	0	0	1	0
Furunculosis and sty	5	5	0	0	0	0
Pustular folliculitis	12	8	2	0	2	0
Cutaneous ulcers	17	9	4	3	1	0
Impetiginized atopic dermatitis	8	4	4	0	0	0
Impetiginized eczematous dermatitis	63	22	22	12	7	4 †
Otitis externa	8	7	0	1	0	0
Secondarily infected 2nd and 3rd degree burns **	23	..	..	..	..	0
Miscellaneous **	38	..	..	..	..	0

* Secondarily infected contact dermatitis, superficial fungus infections, and others.

** Statistical analysis or results not feasible. (See discussion in text.)

† Reactions not due to irritation or sensitization. (See discussion in text.)

Our results with topical neomycin therapy are summarized in Table 1. Patients who had impetigo, impetiginized dermatitis, ecthyma, acute paronychia due to bacterial infection, furunculosis, and hordeolum (sty) responded promptly and in the vast majority, the conditions cleared up within three to six days. Only seven of the 95 patients in this group failed to have a rapid and com-

---

[2] Warth, P. T.; Chandler, C. A., and Bliss, E. A.: Antibacterial Action of Neomycin and Furadroxyl in Vitro and in Vivo, Bull. Johns Hopkins Hosp. **86**: 169 (March) 1950. Waksman, E. A.; Hutchison, D., and Katz, E.: Neomycin Activity upon Mycobacterium Tuberculosis and Other Mycobacteria, Am. Rev. Tuberc. **60**: 78 (July) 1949. Hobby, G. L.; Lenert, T. F., and Dougherty, N.: The Evaluation of Neomycin and Other Antimicrobial Agents of Bacterial and Fungal Origin and Substances from Higher Plants, Ann. New York Acad. Sc. **52**: 775 (Dec.) 1949.

[3] Waisbren, B. A., and Spink, W. W.: A Clinical Appraisal of Neomycin, Ann. Int. Med. **33**: 1099 (Nov.) 1950.

[4] Carr, D. T.; Brown, H. A., and Pfuetze, K. H.: Occurrence of Deafness in Neomycin Therapy, Correspondence, J. A. M. A. **144**: 65 (Sept. 2) 1950.

[5] Duncan, G. G.; Clancy, C. F.; Wolgamot, J. R., and Beidleman, B.: Neomycin: Results of Clinical Use in 10 Cases, J. A. M. A. **145**: 75 (Jan. 13) 1951.

[6] Wolgamot, J. R., and Duncan, G. G.: Clinical Use of Neomycin: Preliminary Report, Pennsylvania M. J. **53**: 1264 (Dec.) 1950.

[7] Lazar, A. M., and Fishman, J.: Neomycin in the Treatment of Otitis Media in Infants, Eye, Ear, Nose, & Throat Month. **29**: 484 (Sept.) 1950.

[8] Poth, E. J.; Fromm, S. M.; Martin, R. G., and Hsiang, C. M.: Neomycin: An Adjunct in Abdominal Surgery, South. M. J. **44**: 226 (March) 1951.

[9] Kile, R. L.; Welsh, A. L., and McAfee, G. D.: Topical Use of Neomycin: A Preliminary Report, Arch. Dermat. & Syph. **62**: 911 (Dec.) 1950.

pletely satisfactory course; Streptococcus hemolyticus was isolated in all seven patients.

It is more difficult to evaluate the efficacy of antibacterial therapy in pustular folliculitis, chronic ulcers, impetiginized atopic dermatitis, and impetiginized eczematous dermatitis. (Other diagnostic terms for impetiginized eczematous dermatitis include infectious eczematoid dermatitis, infectious eczema, and others.) In these types of pyogenic cutaneous infections, numerous other predisposing and etiological factors must be taken into consideration.

Neomycin ointment and/or neomycin in aqueous solution seemed to be particularly effective in the treatment of otitis externa, although in our group there were only eight patients with this disease.

The miscellaneous group of diseases included seborrheic blepharitis, secondarily infected neurotic excoriations, exfoliative dermatitis, pemphigus, furfuraceous impetigo, secondarily infected squamous cell carcinoma, Behçet's syndrome, bacterid of the hands and feet, perlèche, ulcers secondary to periarteritis nodosa, mycosis fungoides, Prurigo nodularis, blastomycosis, dermatitis herpetiformis, bromhidrosis, secondarily infected psoriasis, kerion, secondarily infected removal sites, and perianal cryptitis. Although our results in this group were not evaluated statistically because of the small number of cases in each diagnostic category, a few observations are in order. As would be expected, local treatment with neomycin controlled the secondary infection factor in almost all patients. The results in two patients with furfuraceous impetigo, two patients with seborrhoeic blepharitis, one patient with secondarily infected psoriasis, and five patients with secondarily infected removal sites were particularly impressive. It is interesting to note that the application of neomycin ointment in three patients with chronic paronychia due to candida albicans resulted in pt exacerbation of the condition; the same sequence ents occurred in one patient with erosio interdigi- blastomycetica. Our preliminary observations in this gard lead us to believe that the exacerbation of a cutaneous lesion, following the local use of neomycin, should lead one to suspect a candida infection. Also in this connection, it is noted that the one patient with cutaneous blastomycosis had a similar exacerbation following the application of neomycin.

Furthermore, we have made no attempt to subject the results with neomycin in the treatment of burns to statistical analysis because numerous other local and general therapeutic measures were used in the treatment of these patients. Our clinical experience with neomycin in the treatment of secondarily infected burns indicated that neomycin was the local treatment of choice when the secondary bacterial infection was due to either the Proteus or the Pseudomonas group. Although it seemed to be just as effective as other antibiotic agents used locally, it was difficult to demonstrate a distinct superiority in the treatment of local infection caused by the gram-positive organisms. In general, we have been impressed with the fact that many secondarily infected burns clear up regardless of local and systemic antibiotic therapy. The course of many bacterial infections complicating burns depends on the management of systemic factors, such as adequate nutrition and local cleanliness accomplished by soap and water together with appropriate débridement. Obviously, infections due to the tetanus bacillus and Clostridium perfringens must be recognized and treated appropriately. In approximately one-third of the patients with secondarily infected burns, the prolonged local application of neomycin, particularly in the form of neomycin solution as a compress, resulted in the replacement of the bacterial flora with a fungus organism, including candida albicans and Aspergillus. The fungi disappeared soon after the neomycin therapy was discontinued, and we did not note any apparent delay in epithelization in any of these patients.

After experimenting with various types of vehicles and varying concentrations of neomycin, we reached the conclusion that the two preferable methods of local application were the following:

1. Neomycin sulfate (5 mg. per gram) in a petrolatum-lanolin base.
2. Neomycin sulfate (1 to 5 mg. per cubic centimeter) in aqueous solution as a compress or soak. We have the impression that 1 mg. of neomycin per cubic centimeter of water is just about as effective as 5 mg. per cubic centimeter, although we cannot be absolutely certain of this.

We were convinced that neomycin incorporated in the water-miscible base which was used was somewhat less effective than neomycin incorporated in the petrolatum-lanolin base.

REACTIONS TO TREATMENT

We did not observe a single instance of allergic sensitivity and/or primary irritant reaction to neomycin in this series of 264 patients. However, two of the patients were sensitive to the lanolin component of the ointment base. A few patients complained of burning on the application of the water-miscible ointment base, especially if there was considerable denudation of the skin. Concentrations of 5 mg. or more of neomycin per cubic centimeter of water seemed to have a considerable drying effect, but the patients did not complain of burning.

In Table 1, we have listed seven patients who had reactions to treatment. In all of these patients this reaction was represented by the development of localized cutaneous moniliasis at the site of application. Candida albicans was cultured from all patients, and the condition cleared up promptly and completely following the discontinuation of neomycin therapy and the use of Castellani's paint, 3% iodochlorhydroxyquin (vioform®) ointment, or gentian violet. Patch test reactions to neomycin were completely negative in all cases.

Blood serum levels of neomycin were determined in 16 patients after neomycin ointment and/or neomycin in aqueous solution had been applied to extensive denuded surfaces for at least one week. Evidence of systemic absorption of neomycin was present in only two of these patients, and in both patients the level was less than 1 γ per cubic centimeter of serum. Neomycin compresses had been applied to both of these patients on a denuded surface covering about 20% of the body which resulted from second and third degree burns.

BACTERIOLOGY

As stated previously, bacterial cultures were done in almost all patients, and numerous repeat cultures were done in many; the total number of cultures was approximately 450. Space does not permit a complete recapitulation of the results. In impetigo, impetiginized dermatitis, ecthyma, paronychia, furunculosis, and sty, the organisms which were isolated included hemolytic Staph. aureus, nonhemolytic Staph. aureus, hemolytic Streptococcus, nonhemolytic Streptococcus, hemolytic Staph. albus, nonhemolytic Staph. albus, Proteus group, Pseudomonas group, Alcaligenes fecalis, Aerobacter aerogenes, and Escherichia coli. One or more types of staphylococci were isolated in approximately 80% of this group of patients, and hemolytic Streptococcus was isolated in approximately 30%, whereas Proteus and Pseudomonas were isolated in only 5%.

In the group of patients with impetiginized eczematous dermatitis, the bacterial flora was quite similar except that hemolytic Streptococcus, Proteus, and Pseudomonas were isolated in a slightly higher percentage of patients. Hemolytic Staph. aureus was the causative organism in all patients with paronychia except one; hemolytic Streptococcus was isolated in this one patient, and the lesion did not satisfactorily respond to therapy with neomycin ointment.

Table 2.—*In Vitro Sensitivity Tests—Hemolytic Staphylococcus Aureus**

	0.4 or Less	2 or Less	5 or Less	10 or Less	25 or Less	50 or Less	More Than 50
Neomycin	63	71	74	0	0	0	0
Aureomycin	35	53	54	62	64	66	—
Terramycin	36	46	49	56	59	60	3
Chloramphenicol	0	24	55	56	61	64	0
Penicillin	48	0	0	0	0	0	0
Bacitracin	0	2	2	23	40	41	0

* Sensitivity expressed in micrograms of antibiotic per cubic centimeter.

Analysis of our results with neomycin therapy in correlation with the cultural findings makes it possible to make the following statements:

1. If any type of Staphylococcus is the predominant organism which is found on culture of the lesion, and if bacterial infection is the important factor, one may expect a prompt, completely satisfactory response following the local application of neomycin.

2. If hemolytic Streptococcus is the predominant causative organism, the results with neomycin therapy are less predictable and, in general, less favorable than those in infections due to staphylococci. The seven patients with impetigo, impetiginized dermatitis, ecthyma, and paronychia, who did not have a completely satisfactory course following neomycin therapy, had infections which were due to hemolytic Streptococcus. On the other hand, 38 other patients in this group with infections due to hemolytic Streptococcus had an entirely satisfactory response following neomycin therapy. It is more difficult to correlate the therapeutic results with the cultural findings in the case of patients with impetiginized atopic dermatitis and eczematous dermatitis due to hemolytic Streptococcus. Neomycin was more effective than other antibiotics used previously in many of our patients with impetiginized eczematous dermatitis, but the reverse was true in other patients. In this group of patients in particular, in vitro sensitivity tests of the predominant bacterial organisms to the available antibiotics are absolutely essential for selection of the therapeutic agent which is apt to be more effective.

3. Our results indicate quite clearly that neomycin is the antibiotic of choice (we have had no experience with polymyxin) for the treatment of patients with infections due to the Pseudomonas and Proteus groups.

4. Our experience with infections due to Alcaligenes fecalis, Aerobacter aerogenes, and Esch. coli is too limited for any definite conclusion, but, in general, neomycin seems to be more effective in this group of infections than other available antibiotics.

IN VITRO SENSITIVITY TESTS

In vitro sensitivity tests to neomycin, using the standard multiple-tube method, were done for 74 strains of hemolytic Staph. aureus, 27 strains of hemolytic Staph. albus, 43 strains of hemolytic Streptococcus, 13 strains of Pseudomonas, and 20 strains of Proteus. The results of these tests are recorded in Tables 2, 3, 4, 5, and 6. In addition, in vitro sensitivity tests to aureomycin, terramycin, chloramphenicol (chloromycetin®), penicillin, and bacitracin were done in a smaller group of cases, and they are available in the tables for comparative purposes.

Table 3.—*In Vitro Sensitivity Tests—Hemolytic Staphylococcus Albus**

	0.4 or Less	2 or Less	5 or Less	10 or Less	25 or Less	50 or Less	More Than 50
Neomycin	27	0	0	0	0	0	0
Aureomycin	0	3	4	0	0	0	0
Terramycin	0	2	3	3	4	0	0
Chloramphenicol	0	2	3	3	3	4	0
Penicillin	0	0	0	0	0	0	0
Bacitracin	0	0	0	0	0	0	0

* Sensitivity expressed in micrograms of antibiotic per cubic centimeter.

Table 4.—*In Vitro Sensitivity Tests—Streptococcus Hemolyticus**

	0.4 or Less	2 or Less	5 or Less	10 or Less	25 or Less	50 or Less	More Than 50
Neomycin	3	9	19	37	42	43	0
Aureomycin	8	12	14	14	17	0	0
Terramycin	13	18	25	30	31	32	0
Chloramphenicol	5	14	23	24	25	0	0
Penicillin	15	17	0	0	0	0	0
Bacitracin	6	12	13	0	0	0	0

* Sensitivity expressed in micrograms of antibiotic per cubic centimeter.

Table 5.—*In Vitro Sensitivity Tests—Pseudomonas**

	0.4 or Less	2 or Less	5 or Less	10 or Less	25 or Less	50 or Less	More Than 50
Neomycin	0	4	8	13	0	0	0
Aureomycin	0	0	0	2	8	9	1
Terramycin	0	0	4	5	7	0	0
Chloramphenicol	0	0	0	0	5	7	0
Penicillin	0	0	0	0	0	0	4
Bacitracin	0	0	0	0	0	0	5

* Sensitivity expressed in micrograms of antibiotic per cubic centimeter.

Table 6.—*In Vitro Sensitivity Tests—Bacillus Proteus**

	0.4 or Less	2 or Less	5 or Less	10 or Less	25 or Less	50 or Less	More Than 50
Neomycin	0	1	15	17	19	20	0
Aureomycin	0	0	0	0	0	1	7
Terramycin	0	0	0	0	0	1	6
Chloramphenicol	0	0	1	6	7	0	0
Penicillin	0	1	2	6	0	0	0
Bacitracin	0	0	0	0	0	0	5

* Sensitivity expressed in micrograms of antibiotic per cubic centimeter.

These results are self-explanatory. They indicate quite clearly that in this regard, neomycin is superior to the other antibiotics which were tested except for hemolytic Streptococci. The sensitivity tests indicated that hemolytic streptococci isolated from patients with cutaneous pyogenic infections were more sensitive to bacitracin, aureomycin, terramycin, and chloramphenicol than to neomycin.

These studies are in accord with those which have been reported by other observers in that neomycin [10] in vitro is bactericidal for a wide variety of both gram-negative and gram-positive organisms.

Residual bacterial counts, using the technique of Spicer,[11] were done in many of these in vitro sensitivity tests. In this regard, the difference between neomycin and the other antibiotics which were tested was striking. In the case of neomycin, the residual counts were almost always zero or only a few organisms; in contrast, the residual counts which were recorded with aureomycin, terramycin, chloramphenicol, and bacitracin were seldom recorded as zero, and in most cases they were very high.

On the basis of our laboratory work, it seems justifiable to conclude that except in hemolytic Streptococcus infections, neomycin is the antibiotic of choice now available if one considers only the in vitro sensitivity tests of bacterial organisms isolated from a representative group of pyogenic cutaneous infections; furthermore, more than 50% of the strains of hemolytic strepticocci were sensitive to neomycin in a concentration within the therapeutic range.

COMMENT

In the past two years, in addition to the continued use of penicillin parenterally in selected cases, our experience with other antibiotics in the treatment of pyogenic cutaneous diseases includes the use of bacitracin ointment, aureomycin ointment, chloramphenicol, aureomycin, and terramycin. We are in agreement with the numerous investigators [12] who have reported on the efficacy of bacitracin ointment and aureomycin ointment in the treatment of pyogenic cutaneous infections. These preparations effect prompt clinical cure in a high percentage of pyogenic cutaneous infections, especially impetigo and impetiginized dermatitis. However, in addition to its therapeutic effectiveness, the choice of an antibiotic for topical treatment depends on factors such as patient acceptance, stability, and especially its sensitizing and/or irritant properties. In this regard, neomycin has certain advantages which are of practical importance. It is unusually stable, freely soluble in water, colorless, and thus far the incidence of sensitization reactions which has been recorded is extremely low. In experiments which will be reported later, we have found neomycin to be unusually nontoxic for epithelial cells growing in tissue culture. In comparison, aureomycin, terramycin, chloramphenicol, and bacitracin are more toxic for epithelial cells in tissue culture.

The fact that we have observed seven patients in whom localized cutaneous moniliasis developed at the site of application seems significant and of practical importance. In the first place, neomycin should not be used locally if the diagnosis of cutaneous moniliasis is suspected. Secondly, if a cutaneous lesion improves initially following the application of neomycin and then spontaneously becomes exacerbated, one must consider the possibility of a complicating monilial infection. It is probable that this sequence of events occurs only with prolonged use of the antibiotic. We have the impression that it is more apt to occur as a complication of neomycin therapy only because neomycin is more effective in sterilizing the area which is under treatment. Experiments involving the incorporation of neomycin in fungus culture medium do not indicate that neomycin enhances the growth of fungi.

We have observed patients with impetiginized eczematous dermatitis in whom hemolytic Streptococcus has been isolated who have responded more favorably to neomycin than to other antibiotics. However, we are of the opinion that neomycin is less effective in the majority of acute noneczematized cutaneous hemolytic Streptococcal infections than are bacitracin ointment and aureomycin ointment, particularly the latter.

If one considers the entire bacterial flora present in the case of cutaneous pyogenic infections, neomycin seems to have a distinct advantage over other available antibiotics because it is also effective against gram-negative bacilli, and it is unusually effective for almost all strains of staphylococci.

One year's experience with any new therapeutic agent should be considered as a preliminary evaluation because it is well known that the incidence of sensitization reactions tends to increase as more experience with the therapeutic agent is accumulated. However, we are impressed with the fact that we encountered no sensitization reactions in the 63 patients who had impetiginized eczematous dermatitis. It is in this group that one expects to see sensitization reactions. The average duration of the disease in these 63 patients was 11 months, and one or more antibiotics had been used previously in 37 of these patients; 10 patients had been found to be sensitive to one or more other antibiotics. The average duration of therapy was 26 days in the patients with impetiginized eczematous dermatitis, which should be sufficient time for sensitization to develop. Furthermore, over a period of several months, repeated courses of topical neomycin therapy were administered in 12 of these patients.

It seems obvious that it would be desirable to incorporate another antibiotic with neomycin in an effort to improve its antibacterial range with respect to hemolytic Streptococcus. Furthermore, it might be well to combine neomycin and a fungicide in order to prevent the development of localized cutaneous moniliasis which seems to occur on prolonged topical application of the antibiotic. Work is in progress along these lines.

SUMMARY AND CONCLUSIONS

1. Our experience with the topical use of neomycin in the treatment of cutaneous pyogenic infections is reported; a total of 264 patients is included in this series.

2. Our results indicate that the preferable methods of local application of the antibiotic include an ointment containing 5 mg. per gram in a petrolatum-lanolin base

---

[10] Waksman and Lechevalier.[1] Footnote 2.

[11] Spicer, S.: Bacteriologic Studies of the Newer Antibiotics: Effect of Combined Drugs on Microorganisms, J. Lab. & Clin. Med. **36**: 183 (Aug.) 1950.

[12] Miller, J. L.; Slatkin, M. H., and Johnson, B. A.: Evaluation of Bacitracin in Local Treatment of Pyogenic Infections, Arch. Dermat. & Syph. **60**: 106 (July) 1949. Sawicky, H. H.; Pascher, F.; Frank, L., and Rosenberg, B.: Therapeutic Assays of Skin and Cancer Unit of New York University Hospital: Aureomycin Hydrochloride Ointment, J. Invest. Dermat. **15**: 339 (Oct.) 1950.

("myciguent") and an aqueous solution of neomycin sulfate containing 1 to 5 mg. per cubic centimeter, used as a compress, soak, or as ear drops.

3. In vitro sensitivity tests reveal that neomycin has an unusually wide antibacterial range, including practically all of the bacterial organisms which are encountered in skin infections.

4. The *in vitro* tests indicated that neomycin is superior to the other antibiotics which were tested in respect to hemolytic Staphylococcus aureus, hemolytic Staph. albus, Pseudomonas, and Proteus, but its in vitro activity in regard to hemolytic Streptococcus is exceeded by bacitracin, aureomycin, terramycin, and chloramphenicol.

5. Excellent results with the topical application of neomycin were recorded in 88 of 95 patients with impetigo, impetiginized dermatitis, ecthyma, paronychia, and furunculosis.

6. Neomycin is an effective therapeutic agent for the treatment of the bacterial factor in a significant percentage of patients with impetiginized eczematous dermatitis.

7. The results which were obtained in a small series of patients with otitis externa were particularly impressive.

8. Localized cutaneous moniliasis developed in seven patients after prolonged local application of neomycin. This complication cleared up promptly after neomycin therapy was discontinued. The significance of this sequence of events is discussed.

9. No sensitization and/or primary irritant reactions to neomycin were noted in this series of patients, unless it is assumed that some of the patients in whom localized cutaneous moniliasis developed actually had a sensitization reaction; all patch tests were negative.

10. The modern treatment of cutaneous pyogenic infections depends on the identification of the causative organisms with in vitro sensitivity tests of the bacterial organisms to the antibiotics that are available in order that the therapeutic agent of choice for the specific patient can be selected.

11. The topical use of neomycin seems to be a most important addition to our therapeutic armamentarium. On the basis of our experience to date, we feel that it is probably the local treatment of choice in the management of cutaneous pyogenic infections except in the case of some infections due to hemolytic Streptococcus. However, additional experience must be accumulated before determining its final place in our therapeutic armamentarium.

927 Strand St.

USE OF NEOMYCIN IN DERMATOLOGY

Roy L. Kile, M.D., Evelyn M. Rockwell, M.D.
and
Jan Schwarz, M.D., Cincinnati

Neomycin, an antibiotic derived from Streptomyces fradiae, was discovered by Waksman and his co-workers in 1949.[1] It differs chemically and biologically from streptomycin and streptothricin.[2]

Studies on the spectra of bacteria affected by neomycin reveal the drug to be bactericidal in vitro [3] against a wide variety of gram-negative and gram-positive organisms,[4] including some that are streptomycin-resistant. Resistance to neomycin develops in the same pattern as resistance to penicillin.[5] Thus resistant strains are less apt to develop to neomycin than to streptomycin. There are indications, however, that resistance to neomycin may develop in Bacillus proteus, in B. pyocyaneus, and in some hemolytic streptococci.

Early in vivo studies showed neomycin to be relatively nontoxic.[6] It may, however, cause kidney and eighth cranial nerve damage,[7] particularly when kidney function is impaired. It is the purpose of this study to evaluate neomycin in dermatological therapy, observing its sensitizing capacity as well as its therapeutic effectiveness.

A preliminary report on the topical use of neomycin ointments has been published.[8]

MATERIALS AND TECHNIQUE

The ointments used in this study contained 5 mg. (1,000 units) of neomycin (supplied by the Upjohn Company, Kalamazoo, Mich.) per gram. Two ointment bases were used: one, water-miscible; the other, greasy. The latter was a mineral oil, wool fat, and petrolatum mixture. Since neomycin is a relatively stable material, the preparations were stored at room temperature.

A variety of dermatoses was included in this study, but primary or secondary infection was the main reason for using neomycin. Appraisal of results was based on the response of these infections to treatment.

From the Department of Dermatology, College of Medicine, University of Cincinnati.

Drs. A. L. Welsh and G. D. McAfee aided in observing some of the patients in this study.

Read before the *Section on Dermatology and Syphilology* at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

1. Waksman, S. A., and Lechevalier, H. H.: Neomycin, A New Antibiotic Active Against Streptomycin-Resistant Bacteria, Including Tuberculosis Organisms, Science **109**: 305 (March) 1949.

2. Swart, E. A.; Hutchinson, D., and Waksman, S. A.: Neomycin, Recovery and Purification, Arch. Biochem. **24**: 92 (Nov.) 1949.

3. (*a*) Duncan, G. G.; Clancy, C. F.; Wolgamot, J. R., and Beidleman, B.: Neomycin: Results of Clinical Use in 10 Cases, J. A. M. A. **145**: 75 (Jan. 13) 1951. (*b*) Waisbren, B. A., and Spink, W. W.: Comparative Action of Aureomycin, Chloromycetin, Neomycin, Q-19, and Polymyxin B Against Gram-Negative Bacilli, Proc. Soc. Exper. Biol. & Med. **74**: 35 (May) 1950.

4. Waisbren and Spink.[3b] (*a*) Duncan, G. G.; Clancy, C. F., and Hudson, J. M.: Effectiveness of Neomycin against Pathogenic Organisms Resistant to Other Antibiotic Agents, Tr. Coll. Physicians Philadelphia **17**: 141 (Feb.) 1950. (*b*) Waksman, S. A.; Lechevalier, H. A., and Harris, D. A.: Symposium on Antibiotics: Neomycin—Production and Antibiotic Properties, J. Clin. Invest. **28**: 934 (Sept., pt. 1) 1949. (*c*) Waksman, S. A.; Katz, E., and Lechevalier, H.: Antimicrobial Properties of Neomycin, J. Lab. & Clin. Med. **36**: 93 (July) 1950. (*d*) Waksman, S. A.; Hutchinson, D., and Katz, E.: Neomycin Activity Upon Mycobacterium Tuberculosis and Other Mycobacteria, Am. Rev. Tuberc. **60**: 78 (July) 1949. (*e*) Warth, P. T.; Chandler, C. A., and Bliss, E. A.: Antibacterial Action of Neomycin and Furadroxyl in Vitro and in Vivo, Bull. Johns Hopkins Hosp. **86**: 169 (March) 1950. (*f*) Kadison, E. R.; Volini, I. F.; Hoffman, S. J., and Felsenfeld, O.: Neomycin Therapy: Its Use in Virus Pneumonia, Tuberculosis and Diseases Caused by Gram-Negative Bacteria, J. A. M. A. **145**: 1307 (April 28) 1951.

The large group termed "prophylaxis" were patients on whom physical agents such as irradiation, freezing, or fulguration were used, and on whom the ointments were employed to prevent infection, or for lubrication. These studies are of value only for assessing possible irritation.

Patients with stasis ulcers, and atopic or seborrheic dermatitis are considered separately, although in most instances the results of therapy are based on the progress of a concomitant secondary infection. This was done particularly to observe a group in which sensitization is known to occur.

TABLE 1.—*Clinical Cases Treated with Topical Neomycin*

		Preparation Used				Results				
Diagnosis	No. of Patients	Water-miscible Base	Greasy Base	Ophthalmic	Wet Dressing	Marked Improvement *	Improvement †	Same	Worse	Reactions
Otitis externa	12	3	9	1	..	1	7	4	..	....
Pustules	15	3	11	1	..	1	14	..	..	....
Infectious eczematoid dermatitis	84	26	61	2	2	33	35	14	2	1 doubtful reaction
Conjunctivitis	6	..	..	6	..	..	5	..	1	1 patient irritated—patch tests negative
Folliculitis	77	23	54	2	..	26	45	6	..	....
Herpes simplex	16	2	15	2	..	2	14	..	..	....
Impetigo	102	11	91	2	..	81	16	2	3	2 patients seemed irritated—patch test negative
Secondary pyogenic infection	100	11	87	3	1	54	42	2	2	2 patients seemed irritated—patch test negative
Blepharitis marginalis	24	..	1	23	..	..	21	2	1	....
Hidradenitis suppurativa	3	2	2	..	..	..	2	..	1	1 patient sensitive to neomycin—positive patch test
Granuloma (nonspecific)	9	2	7	..	..	..	9	..	..	....
Acne varioliformis	3	3	2	..	..	..	3	..	..	....
Perlèche	10	3	6	2	..	3	4	3	..	1 patient treated 5 mo., then seemed irritated
Fissures	51	7	41	5	1	8	40	3	..	....
Prophylaxis ‡	70	10	35	26	..	..	..	..	..	....
Stasis ulcers	22	12	9	..	5	2	15	2	3	1 irritation from wet dressings—patch test negative
Burns	7	1	6	..	..	2	5	..	..	....
Furuncles	21	2	20	..	..	2	18	1	..	....
Infected sebaceous cysts	14	5	8	3	..	1	13	..	..	....
Dermatitis repens	4	..	4	..	..	1	3	..	..	....
Paronychia	12	2	11	..	..	..	12	..	..	....
Acne excoriée	10	4	6	..	1	3	6	1	..	....
Kerion	5	..	5	..	..	..	5	..	..	....
Seborrheic dermatitis	9	3	6	1	1	2	6	1	..	....
ethyma	8	1	7	..	..	6	2	..	..	....
cosis	9	5	5	..	..	1	7	..	1	....
iscellaneous: x-ray burn, acne keloidalis, cellulitis, sty	10	1	9	..	..	..	4	6	..	....
Secondarily infected atopic dermatitis	9	1	8	..	2	4	4	1	..	....
Total	722	..	..	..	..	233	357	48	14	9

* Marked improvement = infection clear in less than one week.
† Improvement = infection clear or better in two or three weeks.
‡ Given to assess irritation in patients treated with physical agents such as irradiation, freezing, or fulguration.

Another series of patients was treated with wet compresses using a solution containing 1 mg. (200 units) neomycin per cubic centimeter. In many instances wet boric acid packs were used on similarly involved areas of the same patient for comparison.

Intramuscularly administered neomycin was given to another group of patients. Varying dosage schedules were used. With one exception, 0.5 gm. (100,000 units) was given once or twice daily. In an attempt to avoid the untoward reactions reported by others, administration of neomycin was not continued longer than seven days. No patients with evidence of impaired kidney function were given intramuscular neomycin therapy.

Cultures from lesions were taken before therapy in 151 patients, with as many follow-up cultures taken as possible. These were taken as swabs from beneath crusts, or from incised pustules after careful cleansing of the skin. Cultures from ulcers, taken as swabs from the ulcerated area and where possible below the surface, were less satisfactory.

Provocative patch tests with the ointment and the water-miscible base containing 5 mg. neomycin per gram were carried out on an additional 124 persons. The second application was made 14 days after the first, and one positive reaction to the water-miscible base containing neomycin was observed. Patch tests with 0.5 gm. neomycin per 5 cc. sterile saline, the water-miscible base alone, and the water-miscible base containing neomycin were repeated on the patient in whom this reaction occurred. The latter two samples gave positive reactions. Apparently this was a case of sensitivity to the water-miscible base rather than to neomycin, since there was no reaction to the neomycin in sterile saline solution.

---

5. Waisbren, B. A., and Spink, W. W.: A Clinical Appraisal of Neomycin, Ann. Int. Med. **33**: 1099 (Nov.) 1950.

6. Duncan et al.[4a] Waksman et al.[4d] (*a*) Waksman, S. A.: Streptomycin and Neomycin: An Antibiotic Approach to Tuberculosis, Brit. M. J. **2**: 595 (Sept. 9) 1950. (*b*) Waksman, S. A.; Frankel, J., and Graessle, O.: In Vivo Activity of Neomycin, J. Bact. **58**: 229 (Aug.) 1949.

7. Kadison et al.[4e] Waksman et al.[6b] (*a*) Karlson, A. G.; Gainer, J. H., and Feldman, W. H.: Neomycin in Experimental Tuberculosis of Guinea Pigs, Dis. Chest. **17**: 493 (May) 1950. (*b*) Carr, D. T.; Brown, H. A., and Pfuetze, K. H.: Occurrence of Deafness in Neomycin Therapy, J. A. M. A. **144**: 65 (Sept. 2) 1950. (*c*) Karlson, A. G.; Gainer, J. H., and Feldman, W. H.: Effect of Neomycin on Tuberculosis in Guinea Pigs Infected with Streptomycin-Resistant Tubercle Bacilli, Am. Rev. Tuberc. **62**: 345 (Oct.) 1950.

8. Kile, R. L.; Welsh, A. L., and McAfee, G. D.: Topical Use of Neomycin: Preliminary Report, Arch. Dermat. & Syph. **62**: 911 (Dec.) 1950.

RESULTS

Table 1 gives the results obtained by topical application of neomycin to 722 patients. Responses were, for the most part, very satisfactory. Many patients used the preparations for a time, discontinued therapy, and then resumed it for the same or another condition. The lack of skin reactions in these patients further emphasizes the low sensitizing capacity of neomycin.

Our early experience with neomycin indicated that the greasy base produced a more rapid effect than the water-miscible base. Therefore, the former was used in most cases. On some patients neomycin was used first in the water-miscible base, and later in the greasy base, with apparently better results with the latter preparation.

Healing proceeded satisfactorily during the use of these preparations. The wet compresses containing neomycin were far more effective than the control (usually boric acid dressings).

TABLE 2.—*Clinical Cases Treated with Intramuscular Neomycin*

			Results			
Diagnosis	No. of Patients	Treatment	Marked Improvement	Improvement	Same	Worse
Secondarily infected contact dermatitis	1	0.5 gm. neomycin I.M. daily for 6 days, W.D.	..	1	..	..
Secondarily infected fungus infection	6	I.M. neomycin, W.D. in 4 patients, neomycin ointment in 2 patients	5	1	..	..
Secondarily infected stasis ulcer	3	I.M. neomycin, W.D., neomycin ointment in 1 patient	..	2	..	1
Furunculosis	4	0.5 gm. neomycin I.M. daily for 3 days	4	..	..	..
Paronychia	1	0.5 gm. neomycin I.M. daily for 4 days	1	..	..	..
Infectious eczematoid dermatitis	6	I.M. neomycin, neomycin ointment locally in 3 patients	4	2	..	..
Cellulitis	2	I.M. neomycin.........	1	1	..	..
Total............	23		15	7	..	1

I.M. = intramuscular administration.
W.D. = wet dressings containing 1 mg. neomycin per cubic centimeter.
Marked improvement = infection clear in less than one week.
Improvement = infection clear or better in two to three weeks.
No reactions were noted in this series. Intramuscularly administered neomycin was never used for more than 7 days.

Most of the cases of pyogenic skin infections showed definite improvement in two to five days. Figure 1 shows the arms of a 6-year-old girl with infectious eczematoid dermatitis before therapy and five days later. Therapy during the first three days consisted of intramuscularly administered neomycin twice daily and neomycin wet dressings; thereafter neomycin ointment was applied three times a day.

Figure 2 shows the side view of a 13-year-old Negro girl with secondarily infected seborrheic dermatitis and the same girl after seven days of therapy. This consisted of neomycin wet dressings applied to the ears 12 hours a day for three days, neomycin ointment, and daily shampoos.

The ointments caused irritation on several patients on whom patch tests were negative. These reactions are difficult to interpret. The greasy ointment base seemed better tolerated than the water-miscible one in most instances. Only one proved case of sensitivity was observed. This woman, who had hidradenitis suppurativa, reacted to both ointments. She had a positive patch test reaction to both, as well as a focal flare of the dermatitis that had been present in her axillae, as the patch tests became positive.

The ophthalmic ointment was satisfactory. No case of irritation from its use was observed. Only occasionally did a patient experience burning on the eyelids or in the eyes, but it was never necessary to discontinue the medication because of this.

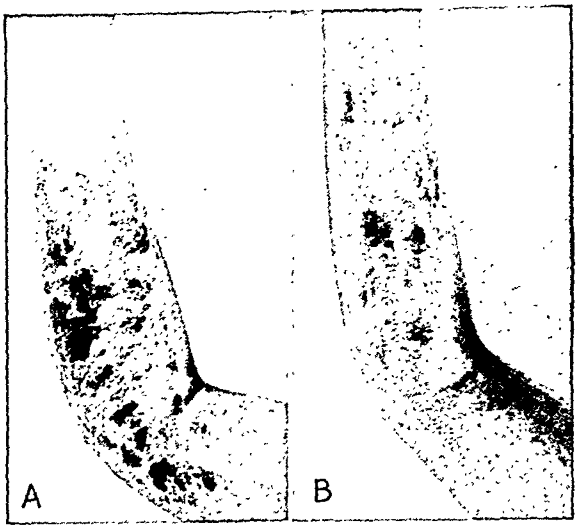


Fig. 1.—Infectious eczematoid dermatitis before and five days after topical and parenteral neomycin therapy.

Table 2 illustrates the results of therapy with intramuscularly administered neomycin with or without topical therapy. No undesirable reactions were noted in these 23 patients.

Among the failures with this therapy were two children in the same family who first had a hemolytic staphylococcic infection and then in whom, while using neomycin ointment, a hemolytic streptococcic infection developed which subsequently cleared with use of penicillin ointment. Two cases of Bacillus pyocyaneus (Pseudomonas aeruginosa) infection resistant to neomycin in vitro as well as in vivo developed while neomycin was being used topically. Duncan, Clancy, Wolgamot, and

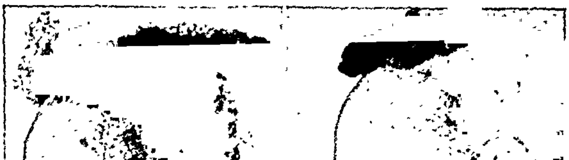


Fig. 2.—Seborrheic dermatitis with marked secondary infection *A*, before therapy and *B*, seven days after topical therapy with neomycin ointment.

Beidleman [3a] state that B. proteus and B. pyocyaneus exhibit properties suggesting potential development of resistance to neomycin.

BACTERIOLOGY

Of the more than 300 cultures taken, 44 were sterile and 30 were contaminated. For final evaluation, cultures from 151 patients were available. Swabs taken as previously described were incubated overnight in heart-brain infusion and were subcultured on blood agar. Most cultures showed hemolytic Staphylococcus aureus. Gelatin liquefaction and plasma coagulation were tested routinely on these cultures. The hemolytic streptococci and B. pyocaneus (Ps. aeruginosa) cultures were not further subdivided. Sensitivity to neomycin was tested on all cultures with paper disks of constant diameter soaked in neomycin and afterwards dried. Photoprints were taken from each sensitivity test.

TABLE 3.—*Inhibition of Staphylococci in Relation to Biological Factors*

Size of Inhibition *	Gelatin Liquefied; Coagulase Present (%)	Gelatin Not Liquefied; Coagulase Present (%)
Less than 15 mm.	4	4
15 to 18 mm.	70	55
19 mm. or over	26	41
	Total of 50 cases	Total of 70 cases

* Paper disk method on agar plates.

TABLE 4.—*Correlation of Cultures with Clinical Results*

	Results						
Culture	Marked Improvement	Improvement	Initial Im. provement	Same	Worse	No Follow-up	Total
Impetigo							
Staph.*	21	7	..	2	..	7	37
Staph.* and Strep.†	2	2	..	..	2	..	6
Strep.†	5	1	..	..	1	..	7
Infectious eczematoid dermatitis							
Staph.*	16	5	4	2	..	4	31
Staph.* and Strep.†	1	..	1	..	..	..	2
Strep.†	1	..	..	..	..	..	1
Infected insect bites							
Staph.*	12	1	..	..	..	4	17
Staph.* and Strep.†	1	2	..	..	..	..	3
Strep.†	1	..	..	..	..	..	1
iculitis, cellulitis, culosis							
h.*	12	3	..	..	1	1	17
ted stasis ulcers							
taph.*	4	2	..	1	1	1	9
Staph.* and Pyocyan.‡	..	2	1	..	..	..	3
Miscellaneous							
Staph.*	10	3	1	..	1	1	16
Pyocyan.‡	..	..	..	1	..	..	1
Total	86	28	7	6	6	18	151

* Staph. = hemolytic Staphylococcus aureus.
† Strep. = hemolytic Streptococcus.
‡ Pyocyan. = Bacillus pyocyaneus.

All staphylococci were sensitive to neomycin, the diameter of inhibition being at least 14 mm. with the disks soaked in aqueous solution containing 3 mg. neomycin per cubic centimeter. Control titration in broth showed that a diameter of ±15 mm. corresponds to complete inhibition at a level of 0.05 mg. neomycin per cubic centimeter of medium. In 20 cases, hemolytic Staph. aureus cultures were obtained one or more times after treatment as well as before treatment. There was no decreased sensitivity to neomycin if the normal variation of sensitivity studies is considered.

There were, as expected, four groups in 128 cultures of hemolytic Staph. aureus: (1) gelatin liquefied, coagulase positive; (2) gelatin not liquefied, coagulase positiv (3) gelatin liquefied, coagulase negative; (4) gelatin no liquefied, coagulase negative. Only five cultures wer coagulase negative. There was a definite difference be-tween the sensitivity to neomycin in Groups 1 and (Table 3). The average diameter of inhibition for Grou 2 was larger and the incidence of diameter more than 1 mm. was 15% greater than for Group 1. There was however, no significant difference in the therapeuti results with these two groups.

Hemolytic streptococci cultures from 19 of 20 patient were inhibited by neomycin in vitro. B. pyocyaneus cultures from 10 of 12 patients were inhibited by neomycin Eight of these latter patients had urological diseases an are not included in this study.

Table 4 shows the comparison of clinical results wit the cultures. In summary, marked improvement o improvement was obtained in 88% of 109 patients wit cultures of hemolytic Staph. aureus, and in 89% of patients with cultures of hemolytic streptococci. Whe cultures of both hemolytic Staph. aureus and hemolyti streptococci were obtained, improvement was noted i 73% of 11 patients; and when a culture of B. pyocyaneu was obtained, improvement was noted in only 50% o four patients. With the exception of hemolytic Stap aureus, the number of cultures is insufficient to perm conclusions that are statistically significant. The result however, suggest that B. pyocyaneus or hemolytic streptococcic infection which develops during treatment of primary staphylococcic infection with neomycin may no be benefited by neomycin therapy as much as a primar staphylococcic or streptococcic infection.

COMMENT

In our early studies with neomycin, we were impresse by its effectiveness and the relative absence of irritatio produced. Initial enthusiasm based on encouraging preliminary experience with a new product is not alway justified, but added experience confirmed our origina impressions. We recognized that many factors are involved in the objective appraisal of a new agent for topical therapy, and that adequate controls are not alway easy to establish. However, enough comparative ev dence is available to convince us of the therapeuti efficacy of this drug. In several instances, neomyci preparations were used satisfactorily on patients wh were sensitive to other antibiotics, including aureomyci bacitracin, and penicillin.

There was only one instance of definite sensitivity t neomycin in a total of 869 cases (including those i which the provocative patch tests were given), indicatin that neomycin has a low sensitizing index. Sensitizatio to the bases was noted more often than sensitization t neomycin. Irritation during treatment with the preparations, however, is difficult to interpret. In the group o nine patients showing irritation, there may have bee more than one individual who was sensitive to neomyci but this was not substantiated by patch tests.

Patients with atopic dermatitis, stasis dermatitis, an seborrheic dermatitis were surprisingly tolerant to th preparations. It is felt that the skin of these patients relatively easily sensitized and affords a good basis fo a test of the possible sensitizing properties of a new dru

SUMMARY AND CONCLUSIONS

1. Neomycin is a valuable antibiotic for topical therapy.

2. In a series of 675 patients with skin infections, neomycin was more effective for most skin infections than other topical agents we have used.

3. Some patients with hemolytic streptococcic and pyocyanic infections did not respond satisfactorily to neomycin.

4. The sensitizing index of neomycin is very low, so that it may be used generally without fear of reactions.

2508 Auburn Ave.

NEPHROSTOMY DRAINAGE AND SPLINTING OF URETER IN ROUTINE KIDNEY SURGERY

H. Haynes Baird, M.D.
and
Hamilton W. McKay, M.D., Charlotte, N. C.

There has been very little written on nephrostomy drainage and splinting of the ureter in routine kidney surgery except in connection with pyeloplasties and revision of the ureteropelvic junction. However, we believe that by applying the following two fundamental surgical principles, nephrostomy drainage and a ureteral splint will be more frequently used: 1. An infected kidney should be adequately drained. 2. Ureteral peristalsis is dependent on a histologically normal intact ureter and fluid within the lumen.

If one goes back many years prior to the advent of chemotherapy and antibiotics, one finds that it was not an infrequent occurrence for a urologist to do a nephrostomy or a pyelostomy in cases of severe pyelonephritis of pregnancy. For a long period of time nothing of importance was done about nephrostomy drainage until the advent of plastic surgery on the pelvis of the kidney and upper part of the ureter. In this paper we are advocating a more liberal use of nephrostomy drainage and splinting of the ureter, based on the preceding two principles, as an adjunct to the armamentarium in obtaining better results in less time and with fewer complications.

This paper is primarily concerned with the use of a nephrostomy drainage combined with ureteral splinting in routine kidney surgery—to be specific, in surgery for the various types of renal calculi, especially when the stones are multiple, and for stag-horn calculi.

Many of these conditions are complicated by some type of obstruction at the ureteropelvic junction. The various methods for relief of ureteropelvic obstruction have been extensively written about and well illustrated in excellent articles in recent years; therefore, we do not wish to dwell on this phase of plastic surgery of the kidney and upper part of the ureter.

We have used various sizes of the McIver nephrostomy tube with an attached ureteral splint, and, in our opinion, this drainage tube and splint is simply constructed and easy to introduce. However, certain objections have been raised to its use. One very well-known writer on plastic surgery of the kidney has stated that the McIver tube is unsatisfactory because in his hands the splinting portion of the drainage tube will not stay down the ureter but works back up into the kidney pelvis. This has not been our experience, based on postoperative x-rays. Another objection to the use of this type of nephrostomy drainage is that the portion of the tube which drains the kidney is connected with the splint, and when the nephrostomy drainage is removed, the ureteral splinting ceases. If prolonged ureteral splinting is indicated, some other form of nephrostomy drainage is indicated. There might be an objection raised to nephrostomy drainage with splinting in ordinary kidney surgery on account of the small opening made in the kidney parenchyma for the exit of the nephrostomy tube. Of course, this results in localized fibrosis with a minimum amount of kidney damage at the point of exit of the tube.

It is our belief that the previous objections are minimal as compared to certain advantages which will be listed and illustrated with case reports. Since urine is a powerful irritant to all tissues, if it is drained through a nephrostomy tube and not allowed to fill the renal fossa the postoperative course should be smoother and any subsequent surgery should be easier because of the decreased amount of fibrosis.

In removing stag-horn calculi or multiple calculi, a small fragment of stone or particles of sand are very apt to be left behind, even though an x-ray is made at the operating table. In such cases these particles are more likely to pass down the ureter if a McIver tube has been used (after its removal), since the opening in the kidney pelvis would be closed and the ureter dilated as a result of the ureteral splint. These small particles, by clumping together, account for the high incidence of stone recurrences in many cases. During the past three years we have used the McIver nephrostomy tube in 37 consecutive cases of renal stones without a recurrence; in 26 cases it has been 18 months or longer since operation and in 11, between 6 and 18 months. We do not intend to imply that this is the answer to stone recurrence, but these results are given as a clinical observation.

Case 1.—R. C., a white woman, 25, was admitted to the hospital with a history of painless gross hematuria intermittently for three weeks. The general physical examination findings were noncontributory, and the urological examination revealed a staghorn calculus in the left kidney (Fig. 1) with a ureteropelvic obstruction and a Grade 2 caliectasis. The blood determinations were normal, including a blood calcium and an inorganic phosphorus determination. The urine contained many white and red blood cells. A urine culture from the right kidney was negative, and a culture from the left was positive for gamma streptococci.

Read before the Section on Urology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

At operation the ureteropelvic obstruction was found to be due to extrinsic causes and was easily corrected, and since there was a large renal pelvis, the stone was removed *in toto* through the pelvis. The interior of the kidney was palpated for any particles of stones, and none were found. A portable x-ray made at the operating room table failed to reveal any stones, so a McIver nephrostomy tube was used and the incision in the renal pelvis was closed with interrupted No. 0000 chromic surgical suture.

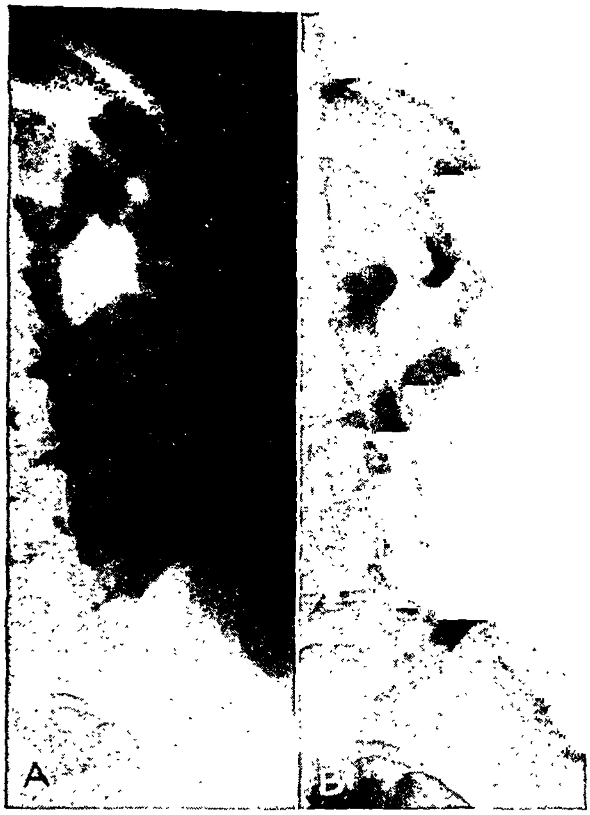


Fig. 1.—(*A*) Kidney, ureter, and bladder x-ray showing a stag-horn stone in the left kidney which fills the renal pelvis. (*B*) Urogram which reveals a ureteropelvic obstruction and caliectasis.

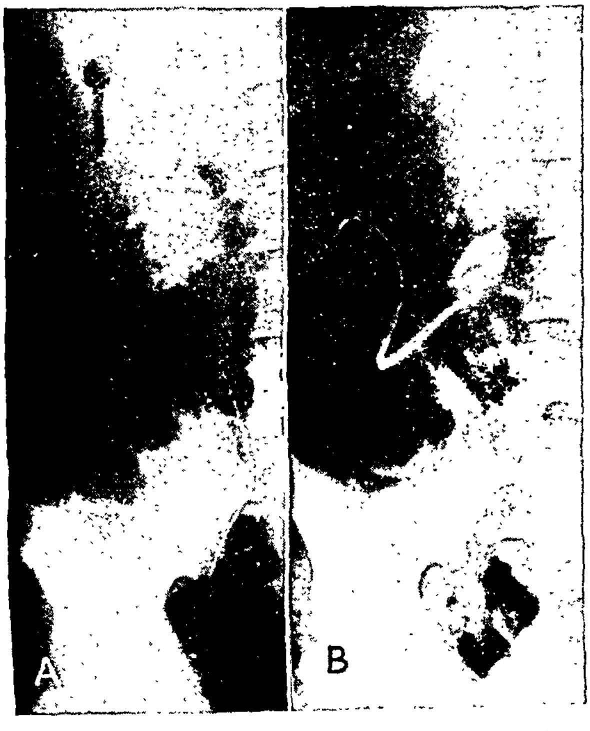


Fig. 2.—(*A*) Kidney, ureter, and bladder x-ray which shows innumerable small stones in the right kidney (*B*) Retrograde pyelogram made by injecting through the McIver nephrostomy tube 12 days postoperatively.

The postoperative course was uneventful, and the McIver tube was removed on the seventh day. Some urine drained through the loin incision for six hours. The patient was discharged nine days after operation. Fourteen days after operation she had severe left renal colic for three hours, followed by the passage of a small stone.

Obviously the small stone which was passed after the patient went home had been left in the kidney at the time of operation. If a nephrostomy tube with a ureteral splint had not been used, the stone could have dropped in the ureter soon after operation, thereby causing considerable trouble, inasmuch as there would have been little or no expulsive force.

Case 2.—J. C., a white man, 33, was admitted to the hospital with severe kidney colic on the right side and a temperature of 105 F. The patient gave a history of perinephric abscess drained on the left side. General physical examination revealed an acutely ill, poorly nourished man. Urological examination revealed a Grade 4 hydronephrosis and over 100 small stones in the right kidney; the left kidney parenchyma was completely destroyed by hydronephrosis.

Laboratory Studies: The red blood cell count was 4,000,000, with 12 gm. of hemoglobin, and the white blood cell count was 15,000, with a shift to the left on the differential. The nonprotein nitrogen was 38 mg. per 100 cc. A urine culture revealed Bacterium coli. Blood calcium and inorganic phosphorus values were normal.

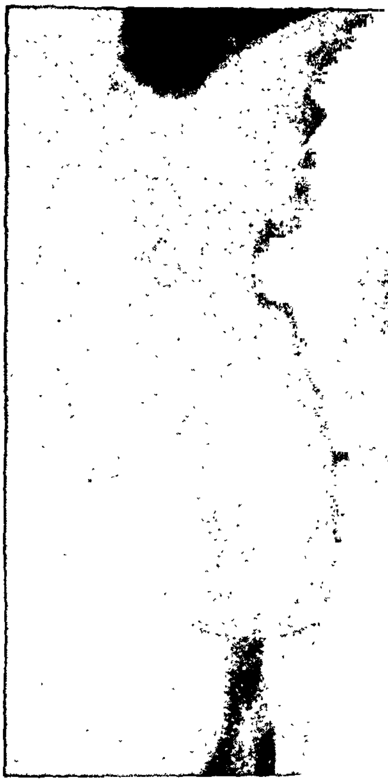


Fig. 3.—A portable x-ray made at the operating table after removal of the stones.

For seven days the patient was treated with streptomycin and a ureteral catheter to the right kidney; the first three days the temperature continued to spike between 103 and 107 F and then returned to 100 F for the next four days. The right kidney was then explored, and a Grade 4 hydropelvis was found, with a high insertion of the ureter which produced almost complete obstruction. The excess pelvis was excised and 130 stones removed (Fig. 2*A*); a portable x-ray made at the operating table (Fig. 3) revealed no stones. A Foley Y-ureteropyeloplasty was done, and a McIver nephrostomy tube with a 10F ureteral splint was used. The postoperative course was very benign; the temperature was normal after the second day. A retrograde pyelogram (Fig. 2*B*), which revealed a minimal hydropelvis with the ureteropelvic juncture at the most dependent part of the pelvis, was made by injecting through the McIver nephrostomy tube 12 days postoperatively. The nephrostomy tube was removed 14 days after operation, with a prompt closure of the sinus.

A right retrograde pyelogram three years later revealed no progression of the hydronephrosis and a normal emptying time. Subjectively, the patient has had no further trouble except for a left nephrectomy for removal of the nonfunctioning hydronephrotic sac.

Case 3.—H. S., a white woman, 33, was admitted to the hospital because of chills, fever, and pain in the left flank. The past history was significant in that she had had similar episodes during two previous pregnancies and was treated with various antibiotics with rather poor results. Physical examination revealed an acutely ill, three-months' pregnant patient with a large-tender palpable mass in the left flank.

Laboratory studies: Urine culture revealed Bacterium coli and Aerobacter aerogenes.

Urological examination revealed a hypoplastic nonfunctioning right kidney and a large hydronephrotic left kidney (Fig. 4*A*), which contained between 300 and 500 cc. of urine. It was very difficult to pass a ureteral catheter into the kidney pelvis because of the angulation of the upper part of the ureter (Fig. 4*B*).

A hysterotomy and tubal ligation were done, and for 16 days the patient was treated with various antibiotics and a ureteral catheter in the left kidney. Despite these measures, the patient continued to have temperature elevation to 104 F and pain in the left flank. At this point we decided to explore the kidney, and it was found to contain many small cortical abscesses about the size of a pinhead; there was a hydropelvis and caliectasis, which contained about 500 cc. of cloudy urine. There was a ureteropelvic obstruction, and the upper part of the ureter formed an S-shaped angulation (Fig. 4*B*) apparently due to the large pelvis, which actually shortened the distance from the bladder to the normal position of the renal pelvis. Realizing that results are not too good if a pyeloplasty is done in the presence of infection, we, nevertheless, decided to go ahead since the patient had been given antibiotics for 16 days with little improvement. The large pelvis was resected, thereby making it possible to straighten the S-shaped angulation of the upper part of the ureter; a Foley Y-ureteropyeloplasty was done posteriorly and one anteriorly, and a McIver nephrostomy tube with a 10 F ureteral splint was used.

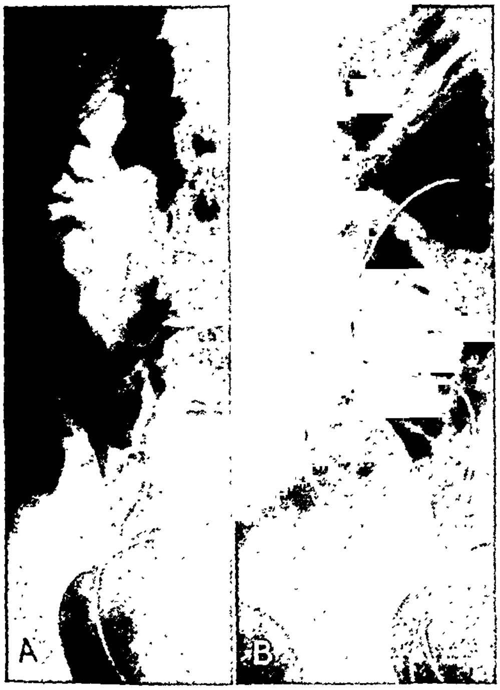


Fig. 4.—(*A*) Preoperative retrograde pyelogram; 300 cc. of dye was injected, which did not fill the kidney completely. (*B*) Kidney, ureter, and bladder x-ray with urethral catheter showing S-shaped angulation of the upper part of the ureter.

The day following operation the patient had a temperature of 101 F, which then returned to normal and remained so for the duration of the hospital stay. A retrograde pyelogram (Fig. 5) was made 10 days after operation by injecting dye through the McIver tube and revealed the suture line to be intact without any extravasation of dye. The nephrostomy tube and ureteral splint were removed on the 14th postoperative day, and urine ceased to leak through the sinus after six hours.

The preceding case illustrates what can be accomplished by adequate drainage of infected urine. Even though the organisms were sensitive to the drugs used, it was not possible to improve the patient's clinical course until nephrostomy drainage was done. It is very easy for this surgical principle to be forgotten in the present antibiotic age.

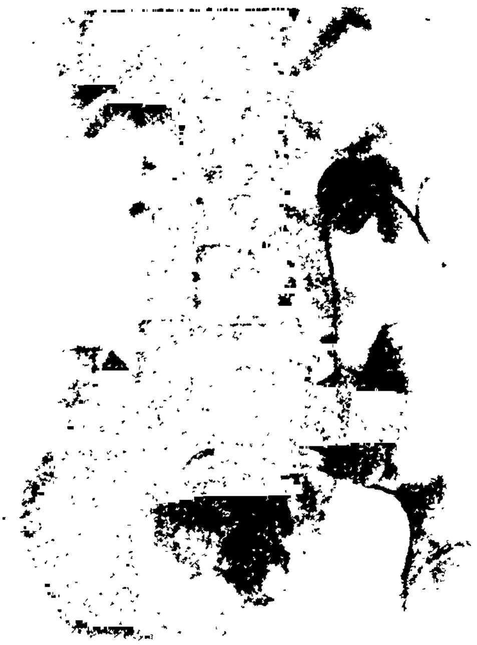


Fig. 5.—Retrograde pyelogram made by injecting 25 cc. of dye through the McIver nephrostomy tube 10 days postoperatively. Note dye in the ureter around the ureteral splint 10F, which means there is an adequate ureteropelvic opening.

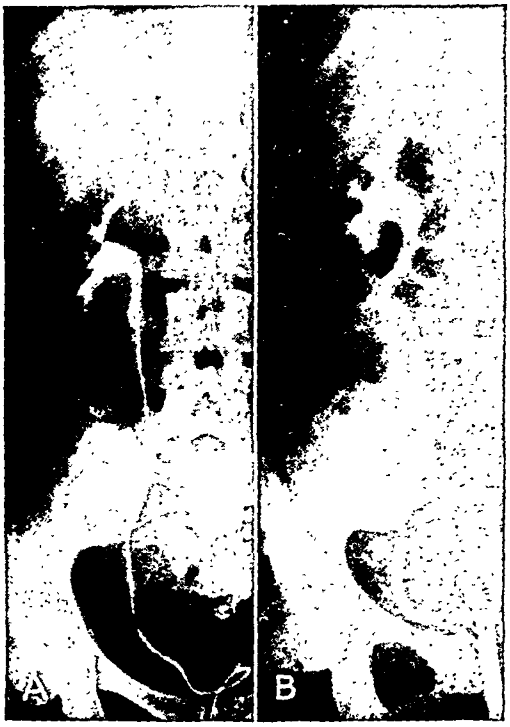


Fig. 6.—(*A*) Preoperative retrograde pyelogram in supine position without any angulation of the upper part of the ureter. (*B*) Postoperative retrograde pyelogram in supine position showing marked angulation of the upper part of the ureter with some hydronephrosis.

Several writers, as well as ourselves, have shown that ureteral peristalsis is dependent on a histologically normal intact ureter with fluid in the collecting system.[1] When an incision is made in the pelvis of the kidney and urine is allowed to drain into the kidney fossa for several days, we can assume that there would be no or very little peristalsis in the ureter during the time that the urine is escaping through the opening in the pelvis of the kidney. Therefore, if the upper part of the ureter has been dissected from its bed, there is apt to be kinking when the ureter is placed back, due to lack of peristalsis, and it will be fixed in a kinked position unless some splinting device is used. Two cases will be described to illustrate the preceding principle.

CASE 4.—B. S., a white woman, 32, entered the hospital with a history of pain in the right flank, epigastric pain, and nausea, which became severer toward the end of the day. These symptoms had been present for about three to four years. Physical examination revealed a palpable and tender right kidney. Otherwise nothing unusual was noted. Urological examination revealed a marked ptosis of the right kidney in the upright position, and the renal pelvis did not empty completely in 15 minutes. A pyelogram in the supine position (Fig. 6*A*) revealed no angulation of the upper part of the ureter.

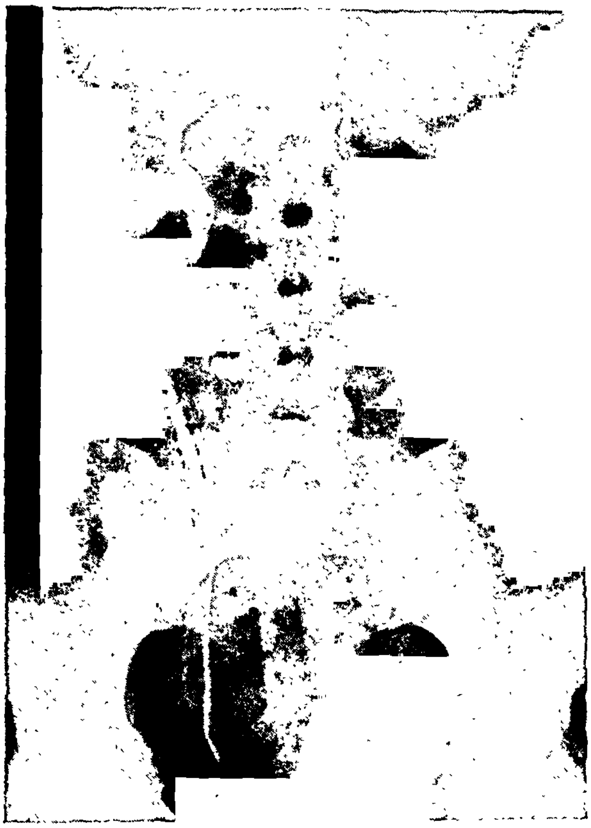


Fig. 7.—*Retrograde pyelogram with marked angulation of the upper part of the ureter and Grade I caliectasis.*

A nephropexy, using Lowsley's ribbon gut, was done along with a lysis of the upper part of the ureter. The postoperative course was uneventful; however, a retrograde pyelogram revealed a marked angulation of the upper part of the ureter (Fig. 6*B*), and it was almost impossible to pass a catheter into the kidney pelvis because of the ureteral angulation.

It is our belief that ureteral peristalsis in the preceding case was greatly diminished for 24 to 48 hours following operation, thus allowing the ureter to become fixed in the permanent angulated position. A ureteral splint would probably have obviated this complication.

CASE 5.—Three years prior to the present hospital admission, H. W., a white woman, 36, had a stone removed from the right renal pelvis. A pyelogram done at that time revealed a normal collecting system and upper part of the ureter. Ever since the pyelolithotomy the patient had complained of a dull pain in the right kidney and episodes of fever and frequency of urination. A pyelogram (Fig. 7) revealed an S-shaped upper part of the ureter through which a catheter could not be passed, and most of the dye remained in the kidney after 15 minutes. The hydronephrosis progressed, and finally a nephrectomy was done for a beginning stag-horn calculus and hydronephrosis, which resulted in cure.

It is our belief that since the upper part of the ureter was dissected from its bed when the pyelolithotomy was done and the urine escaped through the opening in the pelvis for several days, there was no stimulus for peristalsis, and thus the ureter became fixed in the angulated position. Had a McIver nephrostomy tube with a ureteral splint been used and the incision closed in the renal pelvis, the patient would probably have a normal kidney today.

Our experience has been, after removing the nephrostomy tube and splint, that healing takes place in most patients immediately. A few drain as long as three days, but most of these patients are healed in 12 to 24 hours. To us and to our patients this improvement in routine kidney surgery is worthy of consideration. We believe that the use of nephrostomy drainage in ordinary kidney surgery when indicated is comparable to the improvement in technique now used in prostatic surgery, namely, a tight closure of the capsule in perineal prostatectomies and a tight closure of the bladder in suprapubic or retropubic prostatectomies. When a urological surgeon is able to cut short the prolonged drainage of urine into the tissues anywhere in the body, it is certainly a surgical accomplishment worthy of comment.

CONCLUSION

It is obvious we are not advocating routine nephrostomy drainage and ureteral splinting in all kidney surgery.

If we exclude plastic surgery of the pelvis of the kidney and revision of the upper part of the ureter, nephrostomy drainage with a ureteral splint is a great advance in ordinary kidney surgery, both from the viewpoint of the urological surgeon and the patient.

1012 Kings Dr. (Dr. Baird).

1. McKay, H. W.; Baird, H. H., and Lynch, K. M., Jr.: Important Factors in the Surgical Removal of Ureteral Calculi, South. M. J. 41: 394-401 (May) 1948.

Penetrating Shafts of Revelation.—In this modern era, no physician, however pragmatic, can limit his horizon by refusing the fruits of the chemist, or experimentalist, and three expansive years (1931-4) in the department of experimental endocrinology at the Lister Institute stamp my own outlook. Nevertheless, we must not forget Pope's dictum that the proper study of mankind is the study of man, or Trousseau's advice to live with our patients by the bedside, or the fact that Nature herself is a most prolific experimentalist. Let us not be unduly obsessed by the laboratory so that our clinical senses and judgment become blurred, but, at the same time, let the clinician maintain a sensitive awareness of the experimentalist and biochemist, so that their penetrating shafts of revelation may not be shut out by obtuseness. On this background, I hope you will permit me today to direct my thoughts mainly along clinical lines and to indicate in the latter part of my address that the richness and plethora of the clinical field may still throw up new features and new syndromes, remembering with Pasteur that "in the field of observation, chance favors only the mind which is prepared."—S. Leonard Simpson, M.D., Adrenal Hyperfunction and Function, *Bulletin of the New York Academy of Medicine*, December, 1951.

DIAGNOSIS AND TREATMENT OF ACUTE INTESTINAL OBSTRUCTION

Robert E. L. Berry, M.D., Ann Arbor, Mich.

There has been some progress in our knowledge of the pathological physiology and treatment of acute intestinal obstruction in the past two decades. Despite this advance, the mortality rate in the treatment of such obstructions remains discouragingly high. There are differences of opinion among persons with considerable experience as to certain aspects of management, but this does not seem to be importantly related to the continued high mortality rate. The commonest causes of death in small-bowel obstructions [1] are peritonitis and infection. Because they are, for the most part, late manifestations of the disease process, their prevention and early, effective treatment should be the logical method of significantly lowering mortality rates. Failure of early diagnosis and delayed application of proved sound therapeutic procedure undoubtedly are the most important factors in maintenance of the lethal results of acute obstruction.

DIAGNOSIS

Acute Mechanical Small-Bowel Obstruction.—Early diagnosis of intestinal obstruction is possible only by the correlation of a carefully taken history and a detailed physical examination. Abdominal pain and vomiting are the earliest symptoms of mechanical obstruction. Even though these symptoms are associated with a large number of acute abdominal diseases, an evaluation of their nature and a careful physical examination will confirm or present evidence strongly suggesting the diagnosis of obstruction. Pain produced by overactive peristalsis in consequence of the intestinal block is of an intermittent crampy nature. It comes on suddenly, increases in crescendo fashion, and may last from one to three minutes. It may then cease as abruptly as it began, only to recur again and again. The pain of strangulated obstruction tends to be severer and fulminating in nature. The severity may be of such degree that a shocklike picture may be present. The pain tends to be continuous in most instances, with frequent exacerbations due to the anoxia-induced increased peristaltic activity of the bowel wall.[2] As nonviability of the bowel is approached, it becomes flaccid, dilated, and inert, and the coliclike nature of the pain gives way to a steady soreness that may indicate the onset of peritonitis.

The importance of differentiating strangulated obstruction of the bowel from simple obstruction cannot be overemphasized (Table). Few more positive indications for operative intervention exist than intestinal obstructions in which the blood supply of the obstructed loop has been compromised.

Vomiting in intestinal obstruction tends to be more frequent and abundant than in other acute abdominal conditions. It has two principal causal factors: (1) a reflex component produced by abnormal stimulation of the visceral afferent nerve tracts by distention, kinking, traction on the mesentery, and strangulation and (2) a mechanical component produced by distention in and above the obstructed area and peristalsis.[3] Strangulated obstructions are usually characterized by more violent, severer, and more persistent vomiting. This is probably due to a greater reflex stimulation of the visceral nerves. Vomiting observed in simple obstructions tends to be somewhat delayed in onset and is produced by mechanical distention and reverse peristalsis.

Obstipation, constipation, and failure to expel flatus are not reliable symptoms in bowel obstruction. Diarrhea may be present. This is possible because the intestinal tract can still discharge its contents distal to the obstruction.

Early in the course of simple obstructions little help to diagnosis is afforded by the general condition of the patient. Auscultation of the abdomen may reveal synchronous concurrence of pain and increased peristaltic activity (borborygmus). The intimate time relationship of pain and abnormal abdominal sounds establishes the pain as that of intestinal colic and is highly significant in the diagnosis of obstruction. The presence of a scar of a previous abdominal operation should always be regarded with suspicion in a patient presenting symptoms of intestinal obstruction because adhesions are one of the commonest obstructing mechanisms.[1]

Differential Diagnosis Between Simple and Strangulated Bowel Obstructions

	Strangulated	Simple
Pain	Sudden onset and fulminating; severe, cramplike; may be continuous	Onset gradual; less severe; tends to disappear during periods of inactive peristalsis
Vomiting	Occurs at onset of pain; severe, continuous, and sustained and may have little relation to peristaltic pain	Begins at considerable interval after onset of pain; tends to be simultaneous with peristaltic action
Shock-like manifestations	May appear early at onset; persistent with progressive severity	Appear late in course of obstruction; tend to be less severe
Response to conservative therapy	Poor	Usually good
Peritoneal fluid	Invariably bloody	Clear
Scout roentgenogram	Isolated loop may be present	Isolated loop rarely present
Mass	May be present	Rarely present
Tenderness	May be marked	Usually not marked
Abdominal spasm	Frequently present and marked	Usually absent
Rectal examination	Bloody rectal discharge may be present	Blood rarely present
Blood studies	Dehydration and hemoconcentration do not respond to therapy; white cell count may be elevated	Dehydration and hemoconcentration respond to therapy

If the obstruction is allowed to progress, profound changes in the patient's appearance and general condition occur secondary to intestinal distention, dehydration, and (if perforation takes place) peritonitis. The accumu-

---

From the Department of Surgery, University of Michigan Medical School, University Hospital.

Read before the Scientific Assembly of the Clinical Session of the American Medical Association, Cleveland, Dec. 7, 1950.

1. Coller, F. A., and Buxton, R. W.: Acute Obstruction of the Small Bowel, J. A. M. A. **140**: 135 (May 14) 1949.

2. Crowley, R. T., and Johnston, C. G.: Therapeutic Considerations in Acute Obstruction of Small Intestines, Surg., Gynec. & Obst. **73**: 1, 1941.

3. Crowley, R. T., and Winfield, J. M.: Collective Review: Internal Strangulating Obstruction of Bowel, Internat. Abstr. Surg. **89**: 417, 1949.

lation of gas (70% from swallowed air) and fluid in the obstructed bowel increases the intraluminal pressure, which causes an outpouring of extracellular fluid into the bowel (Fig. 1). The resulting dehydration and diminution of circulating blood volume are a direct result of this loss.[4] Obstruction distention is also responsible for certain effects the nature of which is still obscure. Vomiting and changes in blood pressure and respiration have been noted experimentally when the bowel has been subjected to high degrees of distention.[5] Finally, distention of the bowel results in venous stasis, edema, and increased permeability of the intestinal wall.

Before it was demonstrated that distention and dehydration could have lethal results in intestinal obstruction, many investigators suggested that toxic products produced in the obstructed bowel were responsible for the lethal effects observed. Although there is still disparity of thought concerning the toxic factor in intestinal obstruction, the great majority of clinical and experimental evidence [6] points to the conclusion that distention and fluid disequilibrium are responsible for most of the harmful systemic effects observed in obstruction. Peritonitis resulting from perforation can produce toxicity, but this effect is the result of the peritonitis and increases the effects of obstruction.

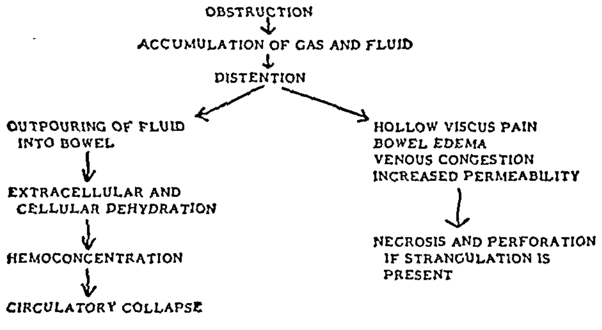

OBSTRUCTION
ACCUMULATION OF GAS AND FLUID
DISTENTION
OUTPOURING OF FLUID INTO BOWEL
EXTRACELLULAR AND CELLULAR DEHYDRATION
HEMOCONCENTRATION
CIRCULATORY COLLAPSE
HOLLOW VISCUS PAIN
BOWEL EDEMA
VENOUS CONGESTION
INCREASED PERMEABILITY
NECROSIS AND PERFORATION IF STRANGULATION IS PRESENT

Fig. 1.—Pathological physiology produced by obstruction distention in small bowel.

The physical findings of strangulated obstructions are clearer than are those of the simple type (Table). External strangulating obstructions usually present an irreducible mass protruding through an abdominal orifice. In very obese persons such a mass may not be visible. Internal strangulating obstructions offer greater diagnostic difficulties for three reasons: (1) many surgical lesions of the abdomen may be easily confused with acute strangulation; (2) no reliable tests exist that absolutely identify this condition, and (3) the cause and site of the obstruction are concealed.

The picture of shock may be observed early in the course of strangulating obstructions. It is characterized by rapid pulse, diminished venous return, and decreased blood volume and is probably principally reflex in origin.[8] Simple obstructions, on the other hand, do not produce this picture until later when dehydration and distention have become well developed. The response of simple obstructions to early treatment is dramatic, the patient obtaining relief and showing marked improvement in clinical condition. In cases of strangulating obstructions marked improvement in the clinical picture does not occur following early treatment because the prime causal factor of the obstruction has not been relieved, and there is continued visceral afferent nervous stimulation with unpleasant effects.

In strangulating obstructions little or no tenderness may be present, even though the pain may be excruciating. One of the reasons for this dissociation is the absence of early irritation of the parietal peritoneum. The exceptions to this are closed-loop obstructions, which are extremely tender, the generalized tenderness associated with spreading peritonitis due to bowel perforation, and increased peritoneal sensitivity associated with transudation of blood and other fluid into the peritoneal cavity after several hours of obstruction. Unless perforation has occurred, true muscle spasm may not exist, although voluntary rigidity may be marked in strangulated obstructions.

Whether or not a mass can be palpated depends upon the nature and location of the obstructing lesion and the thickness of the abdominal wall. It is of significance only when it can be palpated. Absence of a mass does not preclude the presence of a strangulating obstruction. Rectal and pelvic examination may reveal masses not detectable by examination of the abdomen. Rectal examination of patients with strangulating lesions of the terminal ileum (intussusception, strangulated Meckel's diverticulum, and so forth) may reveal blood on the examining finger, which provides strong corroborating evidence of the nature of the obstructive lesion.

Bloody peritoneal fluid is always present in strangulated obstructions four to six hours after the onset of symptoms. Increased capillary and venous pressures with concomitant rupture of these vessels account for the presence of blood in the peritoneal cavity. However, if the primary lesion totally occludes the arterial supply (as, for instance, in mesenteric arterial embolism) bloody fluid may not be present. Blood in the peritoneal cavity is not pathognomonic of strangulated intestinal obstructions since it also occurs in other acute abdominal diseases, such as hemorrhagic pancreatitis, ectopic pregnancy, trauma and torsion of pedunculated ovarian cysts. It is, however, one of the most helpful signs in the differentiation of simple from strangulated obstructions.

Little help in the diagnosis of intestinal obstruction is obtained from examinations of the urine and blood shortly after the onset of symptoms. A rising leucocyte count is suggestive of strangulated lesions but is not an entirely reliable sign. Most of the profound changes in body fluids that may be reflected by laboratory findings (e. g., hemoconcentration, diminished plasma and red blood cell volumes, rising nonprotein nitrogen, and changes in serum sodium, potassium, chloride, and bicarbonate) are the result of large losses of body fluid secondary to distention and prolonged vomiting.

X-Ray.—The most important laboratory aid in the diagnosis of intestinal obstruction is the scout roentgenogram of the abdomen. Roentgenograms taken early after the onset of symptoms in cases of simple obstructions may show little, but as distention progresses the involved loops begin to lie in a horizontal fashion across the abdomen and give rise to the familiar stepladder arrangement of the coils of the distended gut (Fig. 2).

---

[4] Johnston, C. G.: Decompression in Treatment of Intestinal Obstruction, Surg., Gynec. & Obst. **70**: 365, 1940.

[5] Schrager, V. L., and Ivy, A. C.: Symptoms Produced by Distension of Gallbladder and Biliary Ducts: Clinical and Experimental Study, Surg., Gynec. & Obst. **47**: 1, 1928.

[6] (*a*) Maddock, W. G., and Coller, F. A.: Sodium Chloride Metabolism of Surgical Patients, Ann. Surg. **112**: 520, 1940. (*b*) Penberthy, G. C.; Irvin, J. L., and Tenery, R. M.: Fluid, Salt and Nutritional Balance in Patients with Intestinal Suction Drainage, Ann. Surg. **112**: 530, 1940.

In cases of strangulating obstructions an early scout roentgenogram may be of great value. Because of the nature of these lesions, an early distended closed C-loop may stand out vividly (Fig. 3). The presence of such an isolated loop of small bowel associated with other diagnostic features of strangulated obstruction is almost pathognomonic. As distention progresses, however, this loop may disappear in the pattern of many distended coils of bowel.

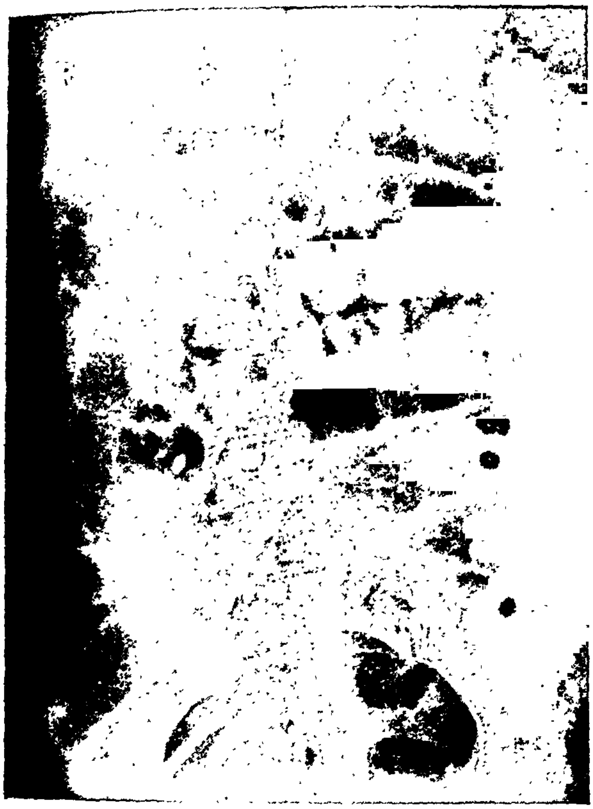


Fig. 2.—Mechanical small-bowel obstruction produced by carcinoma of the splenic flexure of the colon. Note the distended right half of the colon and the stepladder effect of the coils of small bowel.

The presence of fluid, manifested by a hazing of the viscera, is further corroborating evidence of a strangulated obstruction, provided other diagnostic features are present.

Adynamic Ileus.—The term "paralytic ileus," which has been used to describe this condition, has largely been discarded because experimental studies have revealed that the contractile power of the gut has not been lost in this condition.[7] Rather it would seem that the activity of the gut is inhibited by overactive sympathetic influence or other inhibitory phenomena. There is no organic obstructing mechanism in cases of adynamic ileus. The distention of the gastrointestinal tract and the failure of normal peristaltic contractions result in failure to propel intestinal contents in a normal manner.

Many disease and traumatic conditions are productive of adynamic ileus. Peritonitis, the trauma of operation, retroperitoneal hemorrhage from any cause, strangulation of the omentum, renal and gallbladder colic, torsion of an ovarian cyst or of the spermatic cord, blunt trauma to the abdomen, prolonged ether anesthesia, fractured ribs, spinal-cord injuries, hyperextension in a body cast, embolism and thrombosis of the mesenteric vessels, infectious fevers, severe general sepsis, and severe central-nervous-system injury are among the known causes of ileus. The entire gastrointestinal tract is usually involved, and in this manner ileus differs sharply from mechanical obstruction. Despite the enormous distention seen in ileus, perforation and gangrene of the intestine are rare occurrences.

The diagnosis of this condition offers no serious difficulty. There is usually a history of one of the predisposing causes. Abdominal examination reveals the tremendous distention which may interfere seriously with respiration. Absent or feeble peristalsis is found upon auscultation of the abdomen. A scout roentgenogram is of great value in diagnosis. The usual pattern is observed in cases of gaseous distention of the entire intestinal tract, with the gas distribution seeking its own level and showing none of the organized loop distention seen in mechanical obstruction (Fig. 4). If the distention is not relieved, the same clinical picture observed in far-advanced mechanical obstruction may ensue due to the effects of distention and large losses of extracellular fluid into the gut by vomiting.

There are occasions in which a differential diagnosis between adynamic ileus and mechanical obstruction may be impossible because components of both may be present concurrently. The hazards of this combination are somewhat lessened by the therapeutic considerations these obstructions have in common.

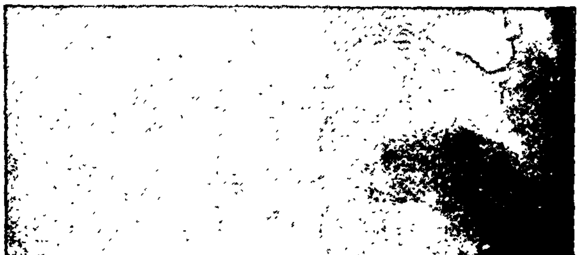


Fig. 3.—Acute strangulated obstruction produced by postoperative adhesions. Observe distended loop (arrow). At autopsy this was found to be infarcted ileum. The presence of this C-loop, when associated with other signs of strangulating obstruction, is almost pathognomonic.

Vascular Obstruction.—Mesenteric Embolism and Thrombosis: Mesenteric thrombosis and embolism are recognized preoperatively with great rarity. The nature

---

7. Wangensteen, O. H.: Intestinal Obstructions: A Physiological and Clinical Consideration with Emphasis on Therapy, Including Description of Operative Procedures, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1942.

of the disease processes with which these lesions may be associated can be of help in diagnosis. The commonest cause of mesenteric artery occlusion is an embolus arising from the valves of the left side of the heart in a patient with serious cardiac disease. Conditions with which venous thrombosis of the mesenteric vessels is most com- only associated are: (1) postoperative splenectomy h extension of the thrombus from the splenic vein o the superior mesenteric vein, (2) hepatic disease, and (3) acute abdominal infections.[8]

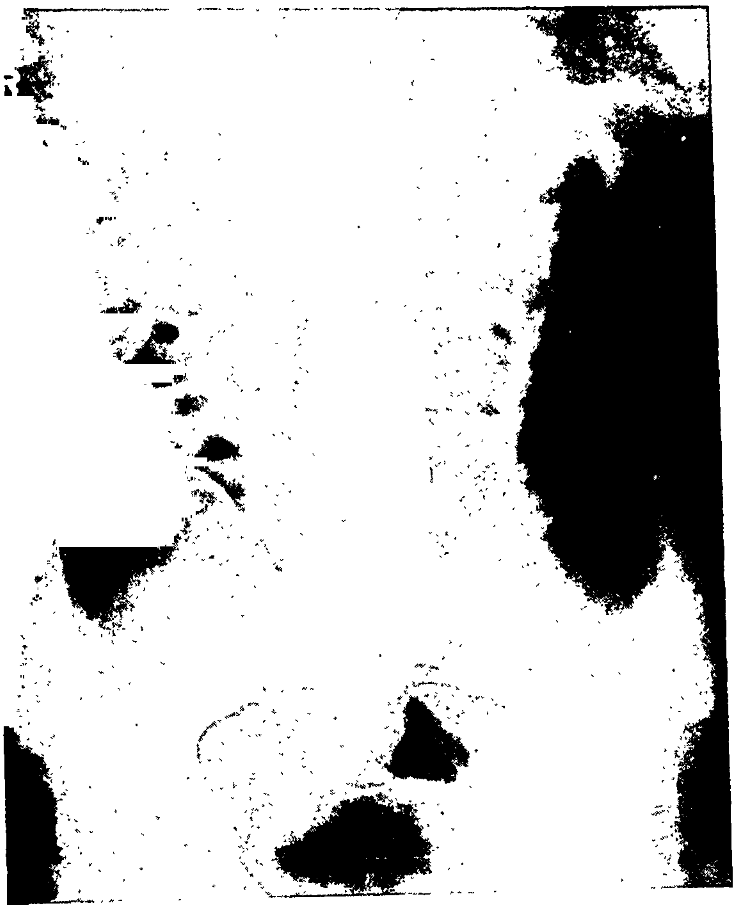


Fig. 4.—Adynamic ileus after inguinal herniorrhaphy. Both large and small bowel show distention. The gas in the bowel has no organized pattern and tends to find its own level.

Mesenteric vascular occlusions are singular in that they may run a course of a week or more before it becomes obvious that something is seriously wrong. The usual manifestations, however, are severe abdominal pain, vomiting, and diarrhea. Both stools and vomitus may contain blood. Shock, if present, is due either to reflex stimulation of the visceral afferent nerves or to large losses of blood into the bowel, occasioned by the venous infarction. Distention of the abdomen is progressive, and peristalsis may be audibly depressed or absent. A scout roentgenogram will reveal distention of both the large and small bowel.

Vascular occlusion involving the mesenteric vessels is a disease of persons usually over 45. Because exact diagnosis is difficult, the important consideration is to recognize that a serious surgical lesion is present that demands operation.

Acute Large-Bowel Obstruction.—Carcinoma is by far the commonest cause of acute mechanical obstruction of the colon. Fundamental differences in the anatomy and physiology of the large and small bowel produce, however, marked variations in the clinical response to obstructions. The small bowel is thicker, more muscular, has a smaller lumen, and the vascular anastomotic patterns are more abundant. Peristalsis in the small bowel is of the progressive type, with periodic waves consisting of annular contraction and relaxation. Peristalsis in the large bowel is of the mass-segmental type, occurring at less frequent intervals and moving the fecal stream from one segment to the next rather abruptly. The pain, therefore, of acute obstruction of the colon may be sudden and severe, but due to its segmental peristaltic activity exacerbations tend to be less severe and less frequent. Vomiting tends to be less severe and less frequent after the initial onset in cases of large-bowel obstruction. Borborygmi are usually present.

The function of the large bowel on the right side is absorption of fluids and on the left concentration and storage of fecal matter. Consequently, there is not the large outpouring of extracellular fluid into the lumen of the colon in response to distention. As a result, evidences of hemoconcentration, dehydration, and shock are no as pronounced as in small-bowel obstructions. The thinner walls and poorer blood supply of the colon and th greater internal pressure exerted on the walls of greater diameter render it more susceptible to perforation.

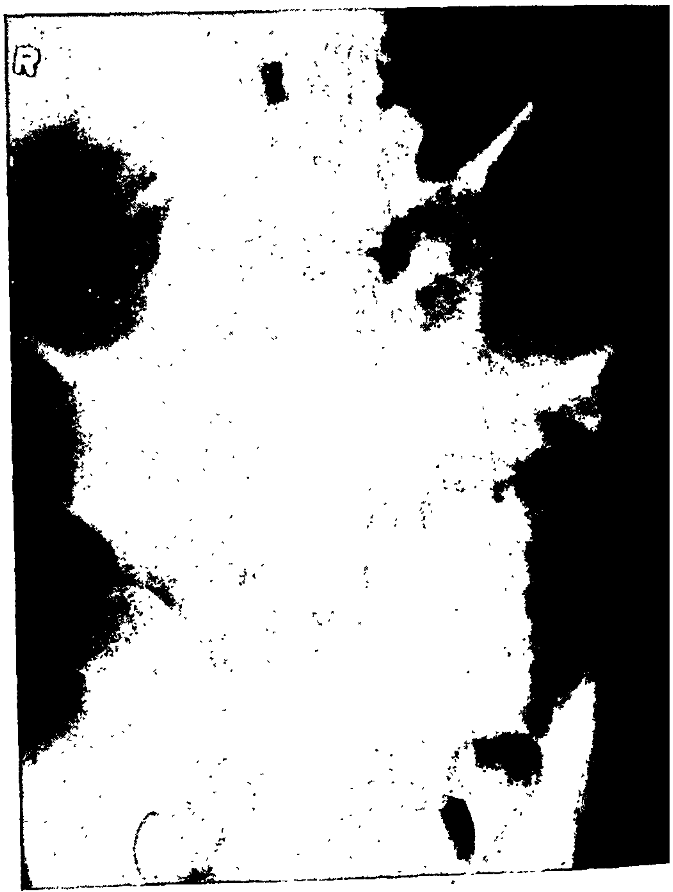


Fig. 5.—Acute mechanical obstruction of the large bowel produce carcinoma of the sigmoid colon. There is tremendous distention of colon with minimal small-bowel involvement because of a comp ileocecal valve.

Tremendous abdominal distention may accomp large-bowel obstructions, but as a general rule a sc roentgenogram of the abdomen will provide adeq differentiation between large and small bowel obst tion. The appearance of the distended loop of colon, beginning just proximal to the lesion and extending in a retrograde manner to a greatly distended cecum, is quite typical in Figure 5. Whether or not the ileocecal valve is competent is of considerable importance. If it is competent, a closed-loop obstruction is produced, and if intraluminal tension is not relieved, necrosis and perforation of the thin-walled colon, particularly at the cecum, may rapidly take place. If the valve is not competent, small-bowel obstruction may also develop. It is of interest to note that in 198 cases of small-bowel obstructions reported from this clinic 60, or 30%, were due to carcinoma of the colon.[1]

---

[8] Whittaker, L. D., and Pemberton, J. de J.: Mesenteric Va Occlusion, J. A. M. A. 111:21 (July 2) 1938.

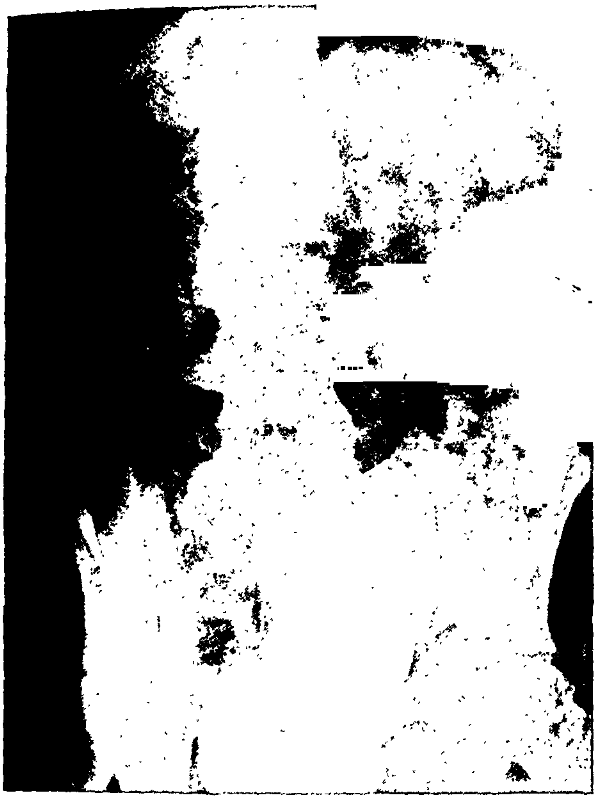


Fig. 6.—X-ray appearance of bowel of Figure 5 after decompression with cecostomy. Barium enema reveals complete retrograde block.

Strangulated obstructions of the colon are not particularly common, and the majority of them are either a volvulus of the sigmoid colon or cecum. It is essentially a disease of the older age group. Once volvulus has occurred, it may spontaneously untwist itself or respond to nonoperative treatment.[9] Strangulated sigmoid volvulus, however, presents the picture of abdominal distention, pain, vomiting, borborygmi, and abdominal tenderness. A mass may be palpable through the abdominal wall. Tenesmus and bloody rectal mucus may also be present. Shock from loss of blood into the infarcted bowel may be present. A scout roentgenogram will reveal tremendous distention of the sigmoid colon, which may present a C-shape that is almost pathognomonic of the lesion. A barium enema may be helpful in the diagnosis but is not essential.

Volvulus of the cecum (Fig. 6) produces mechanical small-bowel obstruction, and this may be confusing early in the course of the disease. Colicky pain, vomiting, distention, and borborygmi may all be present. A tender mass may be palpable in the right lower quadrant. A scout roentgenogram will reveal a large "empty space" in the right iliac fossa with incisurae characteristic of the colon; a barium enema may show no retrograde passage beyond the obstruction.[10]

TREATMENT

All forms of treatment in intestinal obstruction have as their final objective the restoration of the continuity of the intestinal stream to as near normal as possible. Regardless of whether the obstruction is mechanical, adynamic, or vascular, there are certain common therapeutic considerations. Intestinal distention and vomiting must be relieved; water and electrolyte abnormalities must be corrected and normal balance maintained; plasma volume and the red blood cell mass should be maintained; infection should be combated with appropriate antibiotics, and finally operation, if necessary, should be timed to obtain the maximum benefit of preoperative management without procrastination or undue attempts to obtain from prolonged preoperative treatment benefits that may be obtained only by operation.

Strangulated and vascular obstructions demand immediate operation. One should not await the appearance of the cardinal signs of intestinal distention in cases of simple mechanical obstruction before advising operation. If the patient is seen early, operation should be carried out immediately. Only in this way can the late effects of intestinal obstruction (distention, dehydration, circulatory collapse) be obviated and the necessity of reparative and preoperative treatment that becomes essential with late obstructions prevented.

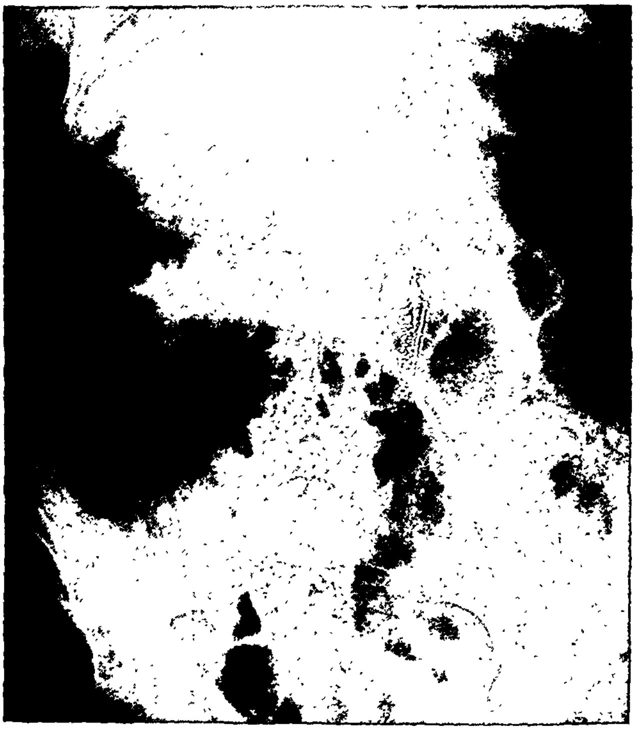


Fig. 7.—Volvulus of the cecum producing mechanical small-bowel obstruction. Observe the large "clear space" in the right lower part of the abdomen.

---

9. Gilchrist, R. K.: Obstruction due to Volvulus of Colon, Arch. Surg. 56: 79, 1948.

10. Seneque, J., and Couade, M.: Quelques Considérations Sur les volvulus aigus du cæcum, J. Chir. 64: 409, 1948.

Management of Small-Bowel Obstruction.—Intestinal Decompression: In the presence of established small-bowel distention, the passage of a long intestinal tube is preferable to the shorter duodenal tube. Under fluoroscopic control the tip of the long tube is placed in the proximity of the pyloric sphincter, and after the tube has entered the duodenum its progress may be followed by repeated fluoroscopic or scout roentgenogram examinations. If difficulty is encountered in passing the tube from the stomach to duodenum, relaxation of the pyloric sphincter by the inhalation of amyl nitrite or injection of atropine may be helpful.

1. Adynamic ileus. The use of long-tube decompression is, by long odds, the most effective method of treating the distention from adynamic ileus. Adequate management of the underlying cause of the ileus must by necessity parallel intestinal decompression if best results are to be obtained. Other supportive measures directed, for the most part, at stimulating or increasing peristalsis have long been used in the treatment of adynamic ileus with little success and, at times, harm to the patient. These include placing stupes on the abdomen and the administration of atropine, pituitary extract, pilocarpine, physostigmine, choline, enemas, spinal anesthesia, lumbar block, and hypertonic sodium chloride solution. Of these measures, administration of spinal anesthesia seems to be the most effective in stimulating peristalsis in patients in whom peritonitis is not present and who have not responded satisfactorily to suction. Use of hypertonic sodium chloride solution may prove of benefit to patients in whom ileus is associated with depletion of body electrolyte. All of these measures should be considered only adjunctive to the primary therapeutic aims of decompression with the tube and treatment of the underlying cause of ileus.

2. Mechanical obstruction. Mechanical obstruction, without strangulation, may be safely and adequately treated by intestinal decompression in certain cases.[4] After adequate decompression has been obtained, what previously may have appeared to be an operative emergency can now become a procedure of election. When the tube has reached the obstruction, the injection of a thin barium mixture may not only reveal the site of the obstruction but may also provide information as to the nature of the obstructing mechanism. With subsidence of distention and edema of the bowel wall, the continuity of the intestinal tract may reestablish itself. This favorable turn of events may seem to be of great benefit to the patient, because operation has been avoided. The concept of benefit obtained may be ill-conceived for two reasons: (1) the nature of the obstructing mechanism has not been identified, and (2) there is considerable chance of recurrence of the obstruction. Operation remains as the most important and effective treatment of simple mechanical obstruction and should be advised in most, if not all, of such cases.

While certain patients respond to decompression with restoration of intestinal tract continuity, others do not. With patients with fairly complete obstructions in whom the probable nature of the obstructing agent is such that spontaneous reestablishment of intestinal continuity will not follow decompression or with patients with obstructions which, after adequate decompression has been obtained, trial discontinuance of suction is followed by recurrence of distention and symptoms, suction should not be continued but operative treatment carried out. The absence of abdominal operative scars in the presence of apparent simple obstruction suggests the increased possibility that early operation may be necessary. Furthermore, simple obstructions may be converted into strangulating ones by the progression of local pathological processes, particularly edema. It may be generally stated that if there is a lack of adequate progressive decompression or an increase in the distention after 36 to 48 hours of apparently adequate suction dependence on suction should be abandoned and operation performed, provided that the patient's general condition is reasonably compatible.

The use of suction to decompress the gastrointestinal tract in patients with obstructive lesions has been one of the most important factors in making surgery safe for the patient. It is not without its disadvanages and hazards, however. Discomfort to the patient, ulceration of the nasal cavity and pharynx, otitis media (in infants), laryngeal edema, perforation of the bowel, intussusception, and augmented difficulty in maintaining water and electrolyte balance are complications that may be associated with the use of such tubes. They should be removed as soon as it has been reasonably established that no benefit is to be obtained from further use.

Repletion Therapy: All degrees of depletion of extracellular as well as intracellular constituents may exist in patients with intestinal obstruction, depending on the site of the obstruction, duration of the period of loss, and whether perforation of the bowel with resultant peritonitis has taken place. The clinical picture of patients therefore may vary, with some showing no signs of extracellular desiccation to some who are in severe shock or moribund from loss of body fluids. As a general rule, the higher the obstruction and the more prolonged the period of distention and vomiting, the greater will be the loss. It should be recognized that in addition to water and electrolyte loss there is a concomitant loss of plasma protein and red blood cells that accompanies any large loss of extracellular fluid.[11] If peritonitis has resulted from perforation of the bowel, the acute protein loss is further augmented. Severe disturbances in acid-base relationships, with profound changes in the blood pH, may be present. If these are of great magnitude, their correction is an important part of the early treatment of the patient.

All attempts at replacement of the constituents of the extracellular and intracellular fluid compartments lost in intestinal obstruction must be geared to the history and clinical picture presented by the patient. Too much emphasis cannot be placed on the importance of using the clinical status of the patient as the primary guide in replacement therapy. Laboratory studies of the blood and urine may provide important confirming evidence as to the patient's status, but reliance on them as an absolute guide is inaccurate and may be hazardous. Maximum accuracy is obtained by the careful correlation of all clinical and laboratory guides, with the clinical appearance of the patient being primary in the estimation of his condition.

---

[11] Elkinton, J. R.; Danowski, T. S., and Winkler, A. W.: Hemodynamic Changes in Salt Depletion and in Dehydration, J. Clin. Invest. 25: 120, 1946.

1. Electrolyte replacement. A standard program of electrolyte replacement cannot be given, because of the necessity of adjusting such treatment to the patient's general condition and response to therapy. Certain principles, however, have been the main support of clinically effective treatment. The main emphasis has been and still is on the replacement of the chief extracellular ions sodium and chloride. The large losses of body fluid associated with severe and prolonged intestinal obstruction also produce a depletion of the important intracellular ion potassium and probably phosphate. The deleterious effects of large losses of potassium in surgical patients are receiving increased attention.[12] The significance of the increased loss of phosphate with severe losses of body water is less well understood, and further investigation will be necessary to understand its importance.

Individuals wth evidences of severe dehydration have lost 4 to 6% of their body weight from loss of water and electrolytes.[13] A rough index is therefore offered of the quantitative amount of repair fluid that may be necessary for repletion. It has been a policy to begin replacement of large losses of extracellular salt water, provided that hypotention is not present, with 0.6% sodium chloride solution rather than 0.9%. It is felt that this solution is handled more physiologically by the body and provides immediate water for that lost insensibly through the skin and lungs as well as water for the formation of urine. If severe hypotention and shock are present due to sodium chloride depletion, the administration of 2% sodium chloride in combination with blood is indicated until the blood pressure is brought to satisfactory levels.

Severe acidosis or alkalosis, when present, should receive early vigorous treatment.[13] Alkalosis as manifested by increased blood pH, and carbon dioxide combining power will respond to isotonic sodium chloride solution therapy in the majority of cases, normal acid-base equilibrium being established as repletion is completed. Extremely severe cases of alkalosis may require the administration of a 0.9% solution of ammonium chloride, but these cases tend to be unusual. It should be remembered that potassium deficits may be associated with a high refractory carbon dioxide combining power and that correction of the alkalosis is obtained only when potassium salts are added to the repair solution.

Acidosis, manifested by a low carbon dioxide combining power and lowered blood pH, is seen more commonly in patients with intestinal obstructions than alkalosis. In the absence of shock or liver damage, a one-sixth molar solution of sodium lactate may be used to combat the acidosis. The administration of sodium bicarbonate as a 1.3% solution will be necessary to combat acidosis in patients in shock or in those who have severe liver damage, as sodium lactate is inefficiently utilized when these conditions are present.

Potassium salts should be added to the repair solutions, when adequate urinary output has been obtained, to aid in the repletion of intracellular water and electrolyte. The severe oliguria usually associated with large losses of body fluids may make immediate administration of potassium salts hazardous because of the danger of heart block when serum potassium levels approach 10 to 12 mEq. Two to 6 gm. of potassium, either as the chloride or a combination of the monobasic and dibasic phosphates, may be added to the repair solutions daily.[12b]

General improvement in the patient's clinical condition, diminution of signs of dehydration, reappearance of chloride in the urine, and reestablishment of normal levels of blood electrolyte and pH all represent positive evidence of the effectiveness of reconstitutive treatment.

2. Water replacement. The status of water hydration is closely allied to the quantitative available electrolyte since total body water is dependent on total body salt. Additional water is necessary, however, to provide water for the insensible loss through the skin and lungs and for the formation of urine. Dependent on environmental and body temperatures, insensible water loss ranges from 1,000 to 2,000 cc. per day.[9a] Another 1,000 cc. is needed for the formation of urine. This is given as 5% dextrose in distilled water. An adequate guide to the status of water hydration may be obtained from determination of the urine specific gravity. If the specific gravity is less than 1,020, it is reasonable to assume that the kidneys are obtaining adequate water to work with. Specific gravity greater than 1,020 suggests that hydration is not adequate and further administration of 5% dextrose in water is necessary.

It becomes obvious that during a 24 to 72 hour period of repletion of a seriously dehydrated patient several liters of electrolyte and dextrose solutions together with blood or plasma transfusions must be administered. There are hazards of overhydration in these circumstances, particularly in older patients and those with poor cardiac reserve. Symptoms of overhydration must be carefully watched for, and the administration of fluids slowed or discontinued as may be necessary.

3. Blood and plasma. In the presence of severe sodium salt depletion, the total circulating protein diminishes at approximately the same rate as do the volumes of plasma and the extravascular extracellular fluid.[11] Large losses of extracellular fluid are associated, therefore, with losses of plasma protein. Rapid reconstitution of extracellular fluid volume without replacement of this plasma protein loss will invite loss of vital intravascular fluid into the interstitial spaces because of diminished colloid osmotic pressure of the blood. The result is tissue edema and continued low blood volume. It has therefore been a policy to administer 500 cc. of blood for each 3,000 cc. of electrolyte solution when repleting large losses of body fluids.

Acute protein loss may be further augmented by loss into the edematous bowel wall and transudation into the peritoneal cavity. If peritonitis has followed bowel perforation, there are even greater losses of blood proteins, and generous transfusions of both plasma and blood will be necessary to maintain the plasma volume and circulating red blood cell mass.

---

[12] (*a*) Darrow, D. C.: Retention of Electrolyte During Recovery from Severe Dehydration due to Diarrhea, J. Pediat. 28: 515, 1946. (*b*) Darrow, D. C.: Changes in Muscle Composition in Alkalosis, J. Clin. Invest. 25: 324, 1946.

[13] Moyer, C. A.: Fluid and Electrolyte Balance, Surg., Gynec & Obst. 84: 586, 1947.

Antibiotics: Study of the effects of administration of antibiotics in cases of experimental closed-loop obstruction and strangulation of the lower part of the ileum in dogs has demonstrated the important role of bacteria in producing death in these types of obstruction. Lethal effects of bacterial growth could be significantly obviated by the use of massive doses of penicillin.[14] The value of the use of antibiotics in cases of human intestinal obstruction has not been thoroughly studied, but it is reasonable to assume that, as in the experimental animal, significant benefit should be obtained from adequate dosage of the proper antibiotics. The use of antibiotics is adjunctive and should change in no way the over-all plan of treatment.

Oxygen: It has been demonstrated experimentally that the inhalation of high concentrations of oxygen exercises a favorable effect in patients with established mechanical obstructions. The reduction of nitrogen tension in the alveolar air by inhalation of high concentrations of oxygen causes the nitrogen in the intestinal lumen to be given up for exhalation by the lungs, with resultant diminution of the distention.[15] Clinical experiences tend to confirm these observations. Maximum benefits from oxygen administration are obtained in the presence of adequately functioning suction, which obviates the effects of further swallowed air.

Operative treatment: Operation remains the most important remedial agent in simple mechanical small-bowel obstruction and is the only effective treatment for strangulated and vascular obstructions. Five types of operative procedure are available to the surgeon: (1) enterostomy; (2) sidetracking procedures such as entero-enterostomy or enterocolostomy; (3) lysis of adhesive bands; (4) resection of pathological bowel and reestablishment of continuity by immediate anastomosis, and (5) exteriorization with establishment of external fistulas.

1. Enterostomy. Because of the effectiveness of long-tube decompression in producing an efficient artificial enterostomy, this procedure, for the most part, has been abandoned. A few patients do not respond satisfactorily to long-tube suction, and yet their condition may not permit extensive operation. Enterostomy may be life-saving with these patients and entirely justified. Twelve out of 15 patients subjected to this procedure at the University Hospital were satisfactorily relieved of their distention.[1] None required operative closure. The incision in the abdominal wall through which the enterostomy is carried out is always infected. Ordinarily this may be of small consequence, but in two patients it was serious and in one the cause of death.

2. Sidetracking. Bypassing obstructing inflammatory masses, fistulas, and irremovable neoplasms by entero-enterostomy or enterocolostomy, has a definite place in the treatment of simple obstruction. Besides being an effective remedial procedure, secondary operations, when performed, may be greatly facilitated by the subsidence of infection in that portion of the bowel side-tracked. An end-to-side enterocolostomy is preferred. The distal end may either be exteriorized or closed and buried subcutaneously so that if intraluminal pressures should be great enough to cause dehiscence of the suture line the drainage will be into the wound rather than the abdominal cavity.

3. Lysis of adhesions. Simple cutting of adhesive bands may be done, which results in complete relief from the obstructing mechanism in certain cases. The involved bowel should be carefully evaluated as to its potential for producing recurrent obstruction. If considerable scarring, fibrosis, or diminution of the lumen is present after freeing the bowel or if considerable obvious trauma was done during the freeing of the involved loops, resection of the involved segments may be the safer procedure.

4. Resection. Resection is the obvious treatment of choice in small-bowel lesions in which the obstructing mechanism has produced a nonviable bowel either by strangulation or vascular obstruction. It is the only effective treatment for mesenteric embolism and thrombosis in which, in some cases, almost total resection of the small bowel may be necessary. Such massive resections are not incompatible with life, but they do carry a high mortality rate. Whether or not to resect a loop of bowel whose viability remains in doubt may tax the skill of the most experienced surgeon. Many of these doubtful cases can be resolved, however, by waiting 20 to 30 minutes—with the involved bowel in warm packs of isotonic sodium chloride solution—before making a decision. No satisfactory clinical or laboratory guides are as yet available for determining the viability of the bowel The final decision rests with the surgeon. If resection is done, the continuity of the bowel should be reestablished by an end-to-end anastomosis. Side-to-side and end-to-side anastomoses should be avoided whenever possible since it has been shown both experimentally and clinically that they carry a higher mortality rate and function less satisfactorily.[7] Whether a closed or open anastomosis is done in cases of early obstruction is of little import Resections in cases of late obstruction should be done with the closed technique whenever possible because of increased bacterial growth in the obstructed loop.

5. Exteriorization. Exteriorization is of particula value in two circumstances: (1) when the patient's critical condition prevents resection and (2) when the condition of the bowel because of edema and infectio precludes the possibility of anastomosis. Secondary operation to reestablish normal continuity of the bowe should be carried out as soon as it is compatible with the patient's general condition. Particularly is this true when it has been necessary to exteriorize small bowe high in the jejunum, thus producing the equivalent of a fistula in the higher part of the small bowel. Infants and small children tolerate exteriorization poorly, and i should be avoided if at all possible among this age group

Management of Acute Obstructions of the Large Bowel.—Treatment of acute mechanical obstruction o the colon in which the ileocecal valve is competent i cecostomy or occasionally colostomy. Cecostomy may be rapidly and easily performed under local anesthesia even in the gravely ill patient and has proven a safe and efficient manner of decompressing the colon. The necessity for immediate decompression of the overdistended colon cannot be overemphasized since necrosis of the thin-walled colon, particularly at the cecum, rapidly takes place when distention is marked. When the ileocecal valve is not competent, small-bowel obstruction may occur, and, in addition to cecostomy, long-tube decompression is necessary.

---

[14] Harper, W. H., and Blain, A., III: Effect of Penicillin in Experimental Intestinal Obstruction: Preliminary Report on Closed Loop Studies, Bull. Johns Hopkins Hosp. 76:221, 1945. Blain, A., III: Penicillin in Experimental Intestinal Obstruction: Summary of Observations with Reference to Their Clinical Application, Surg., Gynec. & Obst. 84:753, 1947.

[15] Fine, J.; Banks, B. M.; Sears, J. B., and Hermanson, L.: Treatment of Gaseous Distention of Intestine by Inhalation of 95 Per Cent Oxygen: Description of Apparatus for Clinical Administration of High Oxygen Mixtures, Ann. Surg. 103:375, 1936.

The management of dehydration and the use of antibiotics and oxygen differs in no important way from that described for small-bowel obstructions except that dehydration, as a rule, is not the serious problem in colon-obstruction cases that it may be in small-bowel obstruction cases.

Patients with strangulated volvulus of the sigmoid colon and volvulus of the cecum should be operated on as soon as possible. If the strangulated sigmoid loop is nonviable, it may either be exteriorized, which is usually safest, or it may be resected and continuity restored by primary anastomosis, provided that the patient's general condition is compatible with such procedure and the condition of the viable bowel satisfactory for safe anastomosis. Strangulation without necrosis may simply be treated by untwisting the volvulus and restoring the bowel to the abdomen. This may not be practical, however, if the loop is greatly distended, and exteriorization or resection may be necessary even though the bowel is viable.

Volvulus of the cecum is simply treated by untwisting the involved colon, decompressing it with cecostomy, and fixing it to the lateral gutter to prevent recurrence. If the cecum is nonviable, resection of the ascending colon and ileocolostomy is necessary.

SUMMARY

The commonest causes of death in cases of intestinal obstruction are late complications, namely, peritonitis and infection. Early diagnosis and application of proved therapeutically effective procedures should significantly lower mortality rates. The diagnosis of acute intestinal obstruction has been discussed, with emphasis on early diagnostic symptoms and physical findings. The management of reparative, preoperative, and operative treatment of acute bowel obstruction has been outlined.

1313 E. Ann St.

SEVERE NOSEBLEED AND ITS TREATMENT

Olav E. Hallberg, M.D., Rochester, Minn.

As many small boys know from experience, and others will learn soon, bleeding from the nose, as a rule, ceases spontaneously. Epistaxis then can be classed as a relative emergency by the physician. I do not think any of us need rush to see patients who have epistaxis because if enough time elapses the bleeding of about 80% of them will be checked without treatment. However, it is well to remember that when bleeding is persistent, a serious degree of anemia and occasionally death may result.

Deficiencies in the clotting mechanism of the blood are seldom contributing factors in nasal hemorrhage. The bleeding is oftener due to a leak in the side of a vessel, which simply bursts open. When an older person has such a leaking vessel, the vessel tends to gape because of the sclerotic changes in arteries and veins and atrophy of smooth muscle. The bleeding of older persons particularly, tends to repeat itself for about two weeks; it probably takes about that long a time for scar tissue to form and obliterate the vessel permanently.

ANATOMY

A knowledge of the anatomy of the blood supply of the nose is of practical advantage to the physician in deciding which method to employ in treating the hemorrhage and in determining the possible length of hospitalization and possibility of recurrence. Only the principal branches will be described herein. In general, the arterial blood supply of the interior of the nose is derived from both the internal and external carotid arteries, the main supply coming from the latter. There is relatively free anastomosis between the adjacent branches of the external carotid artery of the same side and between the corresponding branches of the two sides. Johnson and Foster [1] have estimated that collateral circulation is established within five days after ligation of the external carotid artery.

The sphenopalatine artery, the terminal branch of the external carotid artery, reaches the nasal cavity through the sphenopalatine foramen. Immediately after entering the nasal fossa, the artery divides into a medial and lateral branch. The lateral branch spreads over the lateral nasal wall. The medial branch called the "nasopalatine artery" enters the septal wall and spreads anteriorly and inferiorly over the septum.

The anterior and posterior ethmoidal arteries arise from the ophthalmic artery of the internal carotid artery. The anterior ethmoidal artery enters the nasal cavity along the side of the crista galli and spreads downward over the anterior superior part of the nasal cavity. It is to be remembered that the posterior ethmoidal artery is of much smaller caliber than the anterior ethmoidal artery. All through the nose, as in the rest of the body, the veins follow the arteries closely.

Woodruff [2] has done much work on epistaxis. He described an area of dilated veins in the posterior part of the nose underneath the posterior end of the inferior turbinate. He stated that the veins in this area become dilated in older persons owing to phlebosclerosis. In

---

From the Section on Otolaryngology and Rhinology, Mayo Clinic.

Read before the Section on Laryngology, Otology, and Rhinology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

[1] Johnson, M. C., and Foster, M. E.: Ligation of External Carotid Artery for Traumatic Nasal Hemorrhage, Ann. Otol., Rhin. & Laryng. 42: 588-591 (June) 1933.

[2] Woodruff, G. G.: Cardiovascular Epistaxis and the Naso-nasopharyngeal plexus, Laryngoscope 59: 1238-1247 (Nov.) 1949.

many of his cases the source of bleeding was from this area. My colleagues and I also have seen several such cases but have not encountered them as frequently as Woodruff. He called this area the "naso-nasopharyngeal plexus."

Nosebleeds are most frequent from early childhood to puberty, but epistaxis in children usually is not serious.

TABLE 1.—*Causes of Bleeding of 212 Hospitalized Patients*

	Patients	%
Not determined	53	25.0
Hypertension without arteriosclerosis	40	18.9
Hypertension with arteriosclerosis	37	17.5
Trauma	21	9.9
Arteriosclerosis without hypertension	15	7.1
Blood dyscrasia	12	5.7
Familial hemorrhagic telangiectasia	10	4.7
Recent infection	9	4.2
Recent operation	6	2.8
General debility	6	2.8
Malignant lesion	3	1.4
Total	212	100.0

CAUSATIVE FACTORS

Determination of the causes of epistaxis is at best inexact, but causes roughly can be divided into local and general. Local causes are (1) trauma, surgical or caused by picking and blows on the nose; (2) acute and chronic infections in the nose; (3) traumatic septal perforations with repeated small hemorrhages; (4) neoplasms; and (5) hereditary hemorrhagic telangiectasia. Patients who have neoplasms often have repeated small hemorrhages, which will sometimes continue for months, and in hereditary hemorrhagic telangiectasis there is a hereditary defect of the capillaries characterized by minute stellar vascular rarefactions in the skin and the mucous membranes.

General causes of epistaxis are (1) hypertension and arterial changes such as in arteriosclerosis; (2) high venous tension, as in emphysema, whooping cough, bronchitis, and tumor of the neck; (3) blood diseases, specially leukemias, pseudohemophilia, true hemoilia, and multiple myelomas; (4) cardiac diseases, escially mitral stenosis and rheumatic fever in childhood; and (5) sudden change to high altitudes, as in flying.

STUDY OF 212 CASES OF SEVERE EPISTAXIS

From 1930 to 1950, 212 patients who had severe epistaxis have been treated by physicians of the Mayo Clinic in the hospitals. Part of the data on these patients has been published elsewhere.[3]

The various causes of hemorrhage in these cases are listed in Table 1. Only trauma to the nose, either accidental or surgical, was considered a direct cause of nasal hemorrhage. All the others are not more than contributory. Trauma figured in only 9.9% of our 212 cases, while in nearly all the remaining cases the nosebleed began when the patient was asleep or at rest.

Severe epistaxis is essentially a geriatric problem, since the nosebleeds of children and young adults are seldom severe. The incidence of severe epistaxis increases directly with the age in our series (Table 2). The commonest causes of noseblood in our cases were conditions which became progressively worse as the patient grew older. Of all patients studied, more than 40% were more than 60 years of age. Of those past 60 years, 65% had hypertension. This corresponds well with the findings in 106 cases reported previously.[3b]

There were 10 patients with familial hemorrhagic telangiectasia in our group of 212. It is an inherited anomaly and often gives rise to severe and at times fatal hemorrhage; it is characterized by the presence of localized angiomas or telangiectatic lesions.

No obvious cause was found for the hemorrhage in 53 of our 212 cases (25%). Nearly all these patients, however, were in the age group in which cardiovascular disease is common.

Few textbooks and papers on nosebleed do more than mention the Little or Kiesselbach area and vessels feeding into it as the source of serious nosebleed. In 50.9% of our 106 patients who required hospitalization for severe epistaxis before 1945, this area was the source of bleeding; whereas, it was the source of bleeding in only 27.4% of 106 patients seen from 1945 through 1950. It is not surprising to those who routinely have to treat nosebleed that anterior septal bleeding can be so serious that hospital apparatus is required in its control.

About 40% of our hospitalized patients bled from the posterior portions of the nose, high or low (Table 3). The sphenopalatine artery or one of its branches seemed to be the source of about half these hemorrhages. In the other half the bleeding seemed to be venous and originated low and posterior. This is the area Woodruff called the "naso-nasopharyngeal plexus."[2]

Bleeding from high and anterior parts of the nose is rare, and in most cases it is caused from a blow on the nose. A rupture of the anterior ethmoid artery or one of its branches is usually the cause of such bleeding. It occurred in six of our cases. Trauma, incidental to repeated packing and removal prior to hospitalization, was found in those cases in which bleeding was from the turbinates or diffusely from the nasal mucous membrane.

When the treatment used at the clinic from 1930 through 1944 is compared with that used from 1945 through 1950, many similarities may be noted (Table 4). There were fewer ligations of the external carotid artery in the latter series. This probably means that the source of bleeding was localized better, and packing was more thorough.

TABLE 2.—*Age Distribution of 212 Hospitalized Patients*

Age, Yr.	Patients	%
Less than 5	5	2.4
5-14	9	4.3
15-24	11	5.2
25-34	10	4.7
35-44	31	14.6
45-54	38	17.9
55-64	53	25.0
65 and more	55	25.9
Total	212	100.0

Seventeen of our 212 patients failed to respond to conservative treatment and required ligation of the external carotid artery. In each instance the bleeding was controlled. In 2 of these 17 cases epistaxis had followed operation on the sinuses. In the remaining cases epistaxis occurred spontaneously. About five days after the ligation an infection developed in the wound of one patient, and a tracheotomy had to be done because of blocked airway. The patient, however, recovered rapidly, and the tracheal wound was closed after three days.

---

[3] (*a*) Spar, A. A., and Hallberg, O. E.: Severe Epistaxis and Its Management: Report of Eleven Cases in Which the External Carotid Artery Was Ligated, Ann. Otol., Rhin., & Laryng. **56**: 141-151 (March) 1947. (*b*) Hallberg, O. E.: Nosebleed and Its Management, Mississippi Doctor **28**: 223-228 (Dec.) 1950.

A deviation of the tongue to the left followed ligation of the left external carotid artery in one case; this disappeared in about a week, Postoperative edema around the left hypoglossal nerve was probably responsible for this complication.

TABLE 3.—*Source of Bleeding in 212 Hospitalized Patients*

Source	1930-1944		1945-1950	
	No.	%	No.	%
Anterior portion of the septum (Kiesselbach's area)	54	50.9	29	27.3
Sphenopalatine or nasopalatine artery	20	18.9	11	10.4
Diffuse bleeding	14	13.2	7	6.6
Turbinates	5	4.7	5	4.7
Naso-nasopharyngeal plexus	..	....	12	11.3
Anterior septal perforation	..	....	6	5.7
Behind spurs and severe septal deflections	..	....	6	5.7
Anterior ethmoid artery or vein	..	....	6	5.7
Undetermined (posterior)	13	12.3	24	22.6
Total	106	100.0	106	100.0

Both external carotid arteries were ligated in a man, 51, who was hospitalized Oct. 9, 1942, for profuse nasal hemorrhage. The bleeding was so severe that he was given 500 cc. of blood by his home physician before transportation to the clinic was attempted. There were profuse hemorrhages from both nostrils apparently because of the presence of a large septal perforation. The blood came out of the nose as well as the mouth. The bleeding was so severe that it was impossible to locate the bleeding point; however, more blood seemed to come from the left nostril than the right. Because of the severity of the bleeding, it seemed likely that the left sphenopalatine artery was the source. Ligation of the left carotid artery promptly controlled the bleeding.

This patient returned a year later with another severe nosebleed. This time more blood seemed to come from the right side of the nose rather than the left. Packing did not control the bleeding. Several transfusions of blood were required, and finally the right external carotid artery had to be ligated. This procedure promptly controlled the bleeding. General examination disclosed nothing of significance. Results of blood tests, which included coagulation time and clot retraction, were within normal limits.

TREATMENT IN HOSPITAL

Each physician has his own favorite method of controlling nasal hemorrhage. The principal object is, however, to stop the flow of blood as soon as possible.

On admission to the hospital the patient should first be examined for symptoms of shock and for active bleeding. If the patient is an adult, he should be given ¼ grain (0.016 gm.) of morphine by hypodermic injection. Children should be given hypnotics, the dosage depending on the age. With close observation of the patient it is not difficult to distinguish between shock due to hemorrhage and the shock-like appearance of a patient who is nauseated from swallowing too much blood. If there is uncertainty as to the condition of the patient, transfusion of blood should be employed.

If the hemorrhage is controlled by packs inserted prior to hospitalization, the packs are left in place, and the patient is watched thereafter for recurrence of bleeding.

When active bleeding is occurring, packs are removed and the nose is cleansed with a suction apparatus under direct vision in an effort to determine the source and severity of bleeding. Cotton pledgets moistened in equal parts of 1:1,000 solution of epinephrine chloride and 10 to 20% solution of cocaine are then used to shrink the nasal mucous membranes and provide local anesthesia for any necessary instrumentation.

Macbeth[4] stated that the middle turbinate is a convenient landmark in the determination of the source of bleeding. It is usually possible to determine whether the bleeding originates from above, below, in front, or behind this structure.

Gauze 1 in. (2.5 cm.) wide and heavily covered with petrolatum (vaseline®) is probably the most useful agent available to the rhinologist for the control of nasal hemorrhage. However, many other types of packing may be satisfactory. Dixon[5] inserted pliable marine sponges piecemeal. Brown[6] and others soaked their packing material in peroxide. These packs, however, cause much discomfort to the patient.

When bleeding comes from the posterior part of the nose, it is sometimes difficult to locate its origin accurately. If bleeding is low and posterior, packing can be made easier if the posterior third of the inferior turbinate is lifted up. Occasionally the bleeding point can then be seen; if there is room enough, the area can be cauterized with the electrocoagulating point, or spot packing can be used. A laminated petrolatum gauze pack may be employed. Also useful in this area is a firm tampon slightly larger than a lead pencil about 2 to 3 in. (5.1 to 7.6 cm.) long, which can be made out of long fiber cotton. Two or three tampons can be wedged firmly between the inferior turbinate and the septum. Woodruff[2] advocated dipping the tampons in a mixture of 4% aqueous anti-

TABLE 4.—*Treatment Employed for Hospitalized Patients*

Procedure	1930-1944		1945-1950	
	No.	%	No.*	% of 106
Packing:				
Nasal	38	35.9	..	....
Nasal and electrocoagulation	23	21.7	13	12.3
Nasal, electrocoagulation, and transfusion	19	17.9	..	....
Spot	..	....	47	44.3
Anterior and postnasal packs	..	....	22	20.8
Blood transfusion	..	....	34	32.1
Electrocoagulation only	5	4.7	11	10.4
Ligation of external carotid artery and transfusion	11	10.4	6	5.7
Chemical cautery	7	6.6	4	3.8
Submucous resection	2	1.9	4	3.8
Injection of foreign protein	1	0.9	..	....
Ascorbic acid and vitamin K	..	....	10	9.4
Rutin and cautery	..	....	4	3.8
Ligation of anterior ethmoidal artery	..	....	1	0.9
Total patients	106	100.0	..	.....

* Some patients had more than one procedure.

---

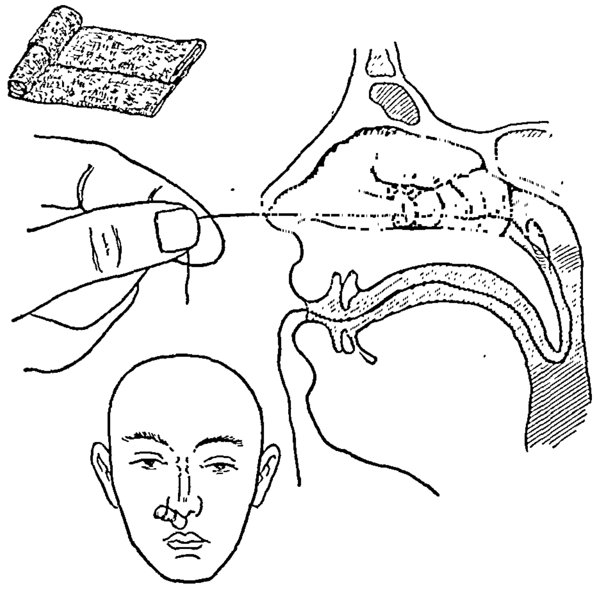
4. Macbeth, R. G.: Anterior Ethmoidal Haemorrhage, J. Laryng. & Otol. 62:42-47 (Jan.) 1948.

5. Dixon, O. J.: Epistaxis; the Use of Sterile Marine Sponges in Its Control, J. Missouri M. A. 45:824-825 (Nov.) 1948.

6. Brown, E. H.: Cardiovascular Epistaxis, Arizona Med. [illegible]3-36 (May) 1949.

pyrine solution, to which an equal amount of a 4% aqueous solution of tannic acid is added. The solution has a rather heavy rubbery precipitate. The tampons are inserted so that the posterior tips just reach the choanae. As an extra precaution a piece of suture material is tied to the anterior ends of the tampons and then fastened to the cheek with a piece of adhesive tape. Whichever types of packs are used, they are left in place for five to seven days. If the bleeding can be arrested completely for this period, sufficient healing takes place so that the result is permanent.

Postnasal Packing.—If anterior packing alone fails to stop the flow of blood, postnasal packing should be employed (figure). Dickie,[7] in his paper on nasal hemorrhage and its treatment, described an effective postnasal pack. A strip of gauze about 2½ to 3 in. (6.3 to 7.6 cm.) wide is folded lengthwise 1 in. (2.5 cm.) from the edge. It is then rolled up tightly until the thick end is a little less than ¾ in. (1.9 cm.) in diameter. It is bound tightly around the middle with a string with long ends. The ends are wound crisscross around the thinner end and tied tightly. One end of the string may be cut off to about 1 to 5 in. (2.5 to 12.7 cm.) and the other end left long. A catheter is passed through the nose and pulled out the mouth. The long end of the string can be made double and is tied to the catheter, and the pack is pulled into place. After the pack is applied, the string coming out of the mouth should not be under any pull at all. Otherwise it may cut into the soft palate.



Method of applying postnasal pack.

Another complication of postnasal packs is collection of blood and possibly infection in the middle ears. This is mainly due to (1) severe bleeding and (2) wrongly applied postnasal pack. Since the type of pack suggested by Dickie has been used at the clinic, this complication has seldom occurred.

A patient with osteomyelitis of the basisphenoid with meningitis and cranial nerve palsies, resulting from nasopharyngeal abscess following the use of a postnasal pack, has been treated at the clinic.[8] In a situation of this sort, in order to maintain a steady pull the string in front should be tied to a large rubber tubing. If the bleeding still is not controlled, petrolatum gauze can be packed against the postnasal pack.

Covering the pack with petrolatum makes insertion and, later, removal easier. This postnasal pack, in my opinion, has many advantages over other types: (1) it causes less discomfort to the patient; (2) in most cases it does not block the eustachian tubes; and (3) it can be left in place for several days without too much discomfort.

In order to prevent infection, all patients who have postnasal packs in place should be given penicillin; we usually give 300,000 units daily.

Ascorbic acid and vitamin K are being given more and more as supportive measures. Neivert, Engelberg, and Pirk [9] found a high incidence of ascorbic acid and prothrombin deficiency in a series of 104 consecutive cases of epistaxis. The gratifying clinical results attending the administration of 300 mg. of ascorbic acid daily and vitamin K-like substances in some of these cases suggest that ascorbic acid and vitamin K have a definite place in the management of nasal hemorrhage. However, the follow-up data in the cases reported were unsatisfactory. At the clinic we usually give vitamin K as menadione sodium bisulfite (hykinone®) in ampules of 4.6 or 30 mg. or in tablet form as 4-amino-2-methyl-1-naphthol hydrochloride ("synkamin"). Patients with severe nosebleeds are often given ascorbic acid and vitamin K even when the examination of the blood shows normal conditions. Dr. Robb, chairman of the Section on Laryngology, Otology, and Rhinology, has suggested the use of surgical pituitary extract (pituitrin®); he has had very good results with it.

In our cases the telangiectatic lesions usually were situated on both sides of the cartilaginous portion of the septum. Large septal perforations were usually present. This also was noted by Figi and Watkins.[10] Not much in the way of permanent cure can be offered these unfortunate patients; however, protracted use of rutin has been of some benefit. It is made from buckwheat and has a tendency to strengthen the walls of the blood vessels. Figi and Watkins suggested a dosage of 300 mg. daily. After about a year of this treatment 30 or 40% show less tendency to hemorrhage. Extensive electrocoagulation and occasionally submucous resection give symptomatic relief.

Topical application of thrombin and thromboplastin is often useful for diffuse bleeding from the mucous membranes of patients who have a blood dyscrasia, especially acute leukemia and multiple myelomas. The nose of a patient who has diffuse bleeding from the membranes should not be packed because the packing will traumatize the membranes further. Occasionally, however, the bleeding is so severe that packing is necessary to save life.

Sometimes use of epinephrine in an atomizer or on small bits of cotton is beneficial. Small children who have frequent nosebleeds should be examined under general anesthesia and the bleeding points electrocoagulated. The source of bleeding is almost always the anterior part of the septum or of the floor.

---

[7] Dickie, J. K. M.: Nasal Haemorrhage and Its Treatment, Canad. M. A. J. 58: 121-126 (Feb.) 1948.

[8] Spar, A. A., and Williams, H. L.: Osteomyelitis of the Basisphenoid and Basiocciput With Meningitis and Cranial Nerve Palsies as a Complication of Nasopharyngeal Packing for Control of Epistaxis; Report of a Case With Recovery, Arch. Otolaryng. 46: 473-477 (Oct.) 1947.

[9] Neivert, H.; Engelberg, R., and Pirk, L. A.: *Nasal Hemorrhage; Studies of Ascorbic Acid, Prothrombin and Vitamin K*, Arch. Otolaryng. 47: 37-45 (Jan.) 1948.

[10] Figi, F. A., and Watkins, C. H.: Hereditary Hemorrhagic Telangiectasia, Ann. Otol., Rhin. & Laryng. 52: 330-341 (June) 1943.

Since about 1947 the use of oxidized cellulose gauze packing has been advocated in many articles.[11] The nose, however, should not be packed tightly with it because it causes necrosis of the mucous membranes, but small amounts should be used directly over the bleeding area. Chemical cautery, especially silver nitrate, should not be used first because it prevents absorption of the oxidized cellulose.[11a]

When conservative measures fail, ligation of a main artery should be employed. Ligation of a principal artery for the control of hemorrhage from one of its branches was first performed more than 150 years ago. According to Bartlett and McKittrick,[12] who reviewed the cases of ligation of the carotid artery reported up to 1917, Abernethy [13] attempted without success to tie off the common carotid artery for hemorrhage in 1795. The first successful ligation of the common carotid artery was reported by Flemming [14] in 1803. Since that time the carotid artery has been ligated hundreds of times for a variety of conditions, including nasal hemorrhage.

Ligation of the external carotid alone has been more limited. McKnight [15] in 1926 reviewed the literature and found 17 instances of ligation of the external carotid artery up to that time. In all the hemorrhage was controlled successfully.

Goodyear [16] in 1937 and Macbeth [4] in 1948 described cases of ligation of the anterior ethmoid artery for nasal hemorrhage. Fitz-Hugh and Risher [17] in 1949 described a case in which the external carotid artery was first ligated after the usual local measures had not been successful. The hemorrhage was completely controlled with the additional ligation of the anterior ethmoid artery.

When bleeding is severe and packing has failed, either the external carotid or anterior ethmoid artery should be tied. The incision in the latter is along the eyebrow. The artery can then be tied or compressed with a silver clip. The posterior ethmoid artery is small and should not cause trouble. If necessary, it could be disrupted with electrocoagulation.

Septal bleeding behind spurs and deflections can be difficult to control. In such cases submucous resection should be performed so that the surgeon can identify the bleeding point and treat it effectively. Often submucous resection alone is enough to control the bleeding. For patients who have anterior septal perforations with crusting and repeated bleeding, a modified submucous resection with removal of exposed cartilage around the edges is the treatment of choice. Submucous resection should be done more as a preliminary treatment for severe hemorrhages in the posterior part of the nose in an effort to identify the bleeding point.

Ligation of the external carotid artery is indicated when nasal hemorrhage persists and recurs with severity, and the level of the hemoglobin and the number of erythrocytes drop steadily in spite of repeated nasal packing and transfusion of blood.

It is not safe to wait until the patient has lost so much blood that a state of shock supervenes. Bean [18] in 1937 reported that in 2 out of 300 cases of coronary occlusion the occlusion was caused by the sudden fall of blood pressure accompanying hemorrhage; in 1 of his cases spontaneous epistaxis occurred. McKinlay [19] reported a case in which coronary insufficiency was precipitated by hemorrhage from a duodenal ulcer.

Recently a patient came to the clinic because of severe nosebleed from the left side of the nose. He had been treated at home for a month with nasal packing and frequent blood transfusions. When he came to the clinic he was bleeding profusely from the posterior aspect of the left nasal passage. Further packing did not control it. The day after admission to the hospital the left carotid artery was ligated. The ligation controlled his bleeding, but he died a couple of weeks later due to multiple hemorrhages in the brain. It certainly is possible that earlier ligation could have saved this patient's life.

Blumgart, Schlesinger and Zoll [20] found that coronary occlusion was due to shock in 11 out of 450 cases. They emphasized the importance of preventing, under any circumstances, a decrease in the blood pressure in cases of coronary sclerosis.

Hagaman [21] has had much experience in ligating the external carotid artery for severe posterior nasal bleeding. This procedure immediately controlled the bleeding in all his cases.

TECHNIQUE OF LIGATION OF THE EXTERNAL CAROTID ARTERY

Ligation of the external carotid artery is a relatively simple procedure. My colleagues and I prefer an incision along the natural creases of the neck at the level of the laryngeal prominence of the thyroid cartilage. The bifurcation is exposed by blunt dissection. It should be remembered that the internal carotid artery has no branches in this area.

The external carotid artery is usually ligated between the branches of the lingual and superior thyroid arteries. After the artery is compressed, the anesthetist or the assistant checks for pulsation of the superficial temporal artery in front of the auricle. If the pulsation stops when the external carotid is compressed, the correct vessel is being selected and ligation is done.

---

[11] (*a*) Elsbach, E. J.: Rhinologic Use of Oxidized Cellulose Gauze, New York State J. Med. **49**: 663 (Mar. 15) 1949. (*b*) Kler, J. H.: Use of Absorbable Gauze in Otolaryngologic Practice, Arch. Otolaryng. **46**: 801-803 (Dec.) 1947. (*c*) Houser, K. M.: Oxidized Cellulose Gauze Packing for Nasal Bleeding, J. A. M. A. **132**: 143 (Sept. 21) 1946.

[12] Bartlett, W., and McKittrick, O. F.: A Study of Secondary Hemorrhage Treated by Ligation of the Common Carotid Artery, Ann. Surg. **65**: 715-729 (June) 1917.

[13] Abernethy, quoted by Bartlett and McKittrick.[12]

[14] Flemming, quoted by Bartlett and McKittrick.[12]

[15] McKnight, H.: Carotid Ligation in Epistaxis, Texas State J. Med. **22**: 271-274 (Aug.) 1926.

[16] Goodyear, H. M.: Nasal Hemorrhage: Ligation of the Anterior Ethmoid Artery: Case Report, Laryngoscope **47**: 97-99 (Feb.) 1937.

[17] Fitz-Hugh, G. S., and Risher, J. C.: Epistaxis; Report of a Case of Ligation of the External Carotid and Anterior Ethmoid Artery, Arch. Otolaryng. **49**: 564-565 (May) 1949.

[18] Bean, W. B.: Infarction of the Heart; a Morphological and Clinical Appraisal of Three Hundred Cases. Part I. Predisposing and Precipitating Conditions, Am. Heart J. **14**: 684-702 (Dec.) 1937.

[19] McKinlay, C. A.: Coronary Insufficiency Precipitated by Hemorrhage From Duodenal Ulcer, Journal-Lancet **63**: 31-34 (Feb.) 1943.

[20] Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Multiple Fresh Coronary Occlusions in Patients With Antecedent Shock, Arch. Int. Med. **68**: 181-198 (Aug.) 1941.

[21] Hagaman, A. V.: Personal communication to the author.

SUMMARY

In 212 cases occurring from 1930 through 1950 epistaxis has been treated in the hospital by physicians of the Mayo Clinic. In about 10% of the cases trauma was the causative factor. More than 50% of the patients were 55 or more. Treatment consisted of the usual conservative procedures, packing and electrocoagulation, and, in a few cases, ligation of the external carotid artery together with supportive measures. Details in the technique of postnasal packing and ligation of the external carotid artery are given.

102 2d Ave. S. W.

VALUE AND HAZARDS OF INTRAVENOUS PROCAINE AMIDE ("PRONESTYL") THERAPY

Norman S. Stearns, M.D., Edmund J. Callahan III, M.D.
and
Laurence B. Ellis, Boston

Procaine amide ("pronestyl") was recently introduced as an agent for the treatment of ventricular arrhythmias. Procaine amide (*p*-amino-N-[2-diethylaminoethyl] benzamide hydrochloride) differs from procaine by the presence of the amide grouping (·CO·NH·) instead of the ester grouping (·CO·O·) present in the latter.[1] Available data indicate that this drug, unlike procaine, is not readily hydrolyzed by plasma enzymes and that plasma procaine amide levels persist for several hours rather than for a few minutes, as in the case of procaine. These data imply a longer duration of action for procaine amide than for procaine. Procaine amide, unlike procaine,[2] can be administered rather rapidly by the intravenous route to conscious unanesthetized patients without, as a rule, producing convulsions or other signs of central nervous system stimulation. In addition, it may be administered in effective antiarrhythmic doses by the oral route.[3]

Our study concerned the immediate clinical effects of intravenous procaine amide therapy; no comparison of its effects with those of procaine or quinidine was made. The purpose of this study was to evaluate the effects of intravenously administered procaine amide on cardiac arrhythmias and arterial blood pressure in an attempt to ascertain the practical usefulness of the agent. The results showed that the predominant clinical effects were (1) alteration of susceptible cardiac arrhythmias and (2) decrease in arterial blood pressure. The latter effect constituted a serious hazard.

METHOD

Procaine amide was administered intravenously to 33 patients with a variety of arrhythmias, both ventricular and supraventricular in nature. All diagnoses of the type of arrhythmia were made by electrocardiogram. Response to carotid sinus stimulation was, in some patients, helpful in differentiating supraventricular from ventricular tachycardias. During the period of procaine amide infusion, arterial blood pressures were measured at one to two minute intervals, and observation for electrocardiographic changes was continuous.

Of the 33 treated patients, 5 were under the age of 50 and 23 were over the age of 60. Ten patients had underlying arteriosclerotic heart disease. Fourteen patients had hypertensive heart disease associated in nine with arteriosclerotic heart disease. There were two patients with cor pulmonale, two with syphilitic heart disease, one with rheumatic heart disease, and four with heart disease of undetermined etiology. There was conclusive evidence of recent myocardial infarction in only one patient (Case 29). Twenty-one patients were in congestive heart failure at the time of procaine amide therapy.

ANTIARRHYTHMIC EFFECTS

Ventricular Tachycardia.—There were eight patients with ventricular tachycardia.[4] The results of therapy are summarized in Table 1. Conversion of ventricular tachycardia to a slower supraventricular rhythm was accomplished during intravenous procaine amide administration in six patients. It is to be noted that in Case 23 conversion was originally effected after administration of 200 mg. of the drug; however, the rhythm reverted to ventricular tachycardia after approximately 45 minutes. A second conversion then took place with an additional 140 mg. of the drug. Ventricular tachycardia did not recur subsequently with oral procaine amide therapy (Table 1).

The patient in Case 22 had intermittent ventricular tachycardia. Before treatment, the attacks of ventricular tachycardia occurred frequently and were of one to two minutes' duration. With the infusion of 500 mg. of procaine amide, the attacks of ventricular tachycardia occurred less frequently, and those noted by continuous observation of the electrocardiogram were of shorter duration. In addition, the appearance of isolated ectopic ventricular beats without ensuing ventricular tachycardia

---

The procaine amide hydrochloride used in this study was supplied by E. R. Squibb & Sons.

This investigation was supported in part by a research grant from the National Heart Institute, U. S. Public Health Service.

A preliminary report of the present study was presented at the meeting of the New England Cardiovascular Society, Boston, Jan. 15, 1951.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School. Postdoctorate Research Fellow, National Heart Institute (Dr. Stearns).

[1] Procaine Amide Hydrochloride—Pronestyl Hydrochloride, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **144**: 1465 (Dec. 23) 1950. Brodie, B. B.; Lief, P. A., and Poet, R.: The Fate of Procaine in Man Following Its Intravenous Administration and Methods for the Estimation of Procaine and Diethylaminoethanol, J. Pharmacol. & Exper. Therap. **94**: 359-366 (Dec.) 1948. Mark, L. C.; Berlin, I.; Kayden, H. J.; Rovenstein, E. A.; Steele, J. M., and Brodie, B. B.: The Action of Procaine Amide (N^1-[2-diethylaminoethyl]-*p*-aminobenzamide) on Ventricular Arrhythmias, ibid. **98**: 21-22 (Jan.) 1950.

[2] Sollman, T.: A Manual of Pharmacology and Its Application to Therapeutics and Toxicology, ed. 7, Philadelphia, W. B. Saunders Company, 1948, p. 273. Kraft, K. A.: Intravenous Procaine, Canad. M. A. J. **57**: 350-353 (Oct.) 1947.

[3] Unpublished data from this laboratory.

[4] Ventricular tachycardia was converted to a slower supraventricular rhythm in each of three additional patients receiving oral procaine amide therapy.

was noted. Because of profound hypotension, responding only transiently to phenylephrine (neo-synephrine®) hydrochloride, intravenous administration of procaine amide was stopped, and 500 mg. of the oral preparation was given. One hour later, there was no evidence of ventricular irritability. The patient in Case 3 had persistent ventricular tachycardia and failed to respond to two trials of procaine amide given intravenously. On the first occasion, 750 mg. of this drug was administered. There was no conversion, but the ventricular rate slowed from 130 to 90 per minute. The slower rate was not maintained by oral doses. On the second intravenous trial, 800 mg. was administered. There was no conversion, but the slowing effect was again noted. Additional doses of the drug were not given, because of severe hypotension.

Conversion of ventricular tachycardia was subsequently accomplished in this patient with oral quinidine therapy. Shortly after conversion, the patient died.

TABLE 1.—*Results of Intravenous Procaine Amide Therapy in Eight Patients with Ventricular Tachycardia*

Case	Digitalis Toxicity	Type of Ventricular Tachycardia*	Total Dose Procaine Amide, Mg.	Procaine Amide Dose to Conversion, Mg.	Effect on Ventricular Tachycardia
28	Yes	Persistent	60	60	Conversion to auricular fibrillation with conduction
1	Yes	Persistent	200	200	Conversion to auriculoventricular tachycardia
23	Yes	Persistent	340	200	Conversion to auricular fibrillation with conduction. Reversion within 45 minutes. Second conversion after additional infusion of 140 mg. of procaine amide
29	No	Persistent	800	800	Conversion to sinus rhythm
3	No	Persistent	750	...	No conversion. Slower ventricular rate. (Procaine amide, 500 mg. orally every 4 hours for 3 doses, without effect)
			800	...	No conversion. Slower ventricular rate
18	No	Intermittent	400	250	Conversion to sinus rhythm
33	No	Intermittent	1,500	240	Conversion to sinus rhythm
22	Yes	Intermittent	500	...	Attacks of ventricular tachycardia less frequent and of shorter duration. Appearance of isolated ventricular ectopic beats

* The known duration of ventricular tachycardia prior to therapy was more than eight hours in each patient. The paroxysms of intermittent tachycardia in this group of patients recurred within intervals of seconds to a few minutes and varied in duration from a few seconds to several minutes.

Ectopic Ventricular Beats.—Frequent ectopic ventricular beats, often from multiple foci, were completely eliminated in 8 of 12 patients and were significantly decreased in number in 3 during administration of the drug and for varying periods thereafter. The high incidence of digitalis toxicity in this group of patients is noted in Table 2. It is of interest that there were two patients in whom digitalization with customary doses or adequate mercurial diuresis after digitalization was accomplished without evidence of ventricular irritability only with adjuvant procaine amide administration. In spite of electrocardiographic evidence of digitalis toxicity prior to procaine amide therapy, additional digitalis and mercurial diuretic drugs were administered to both of these patients, with clinical improvement of moderately severe congestive failure. The omission of orally administered procaine amide on at least two occasions in each of these patients was followed by the reappearance of ectopic ventricular beats.

TABLE 2.—*Results of Intravenous Procaine Amide Therapy in Twelve Patients with Frequent Ectopic Ventricular Beats*

Case	Digitalis Toxicity	Total Dose *Procaine* Amide, Mg.	*Effect on* Ectopic Ventricular Beats	No. of Ectopic Foci	
				Before Therapy	After Therapy
30	Yes	60	Eliminated	1	0
32	Yes	100	Eliminated	1	0
6	Yes	160	Eliminated	3	0
15	Yes	300	Eliminated	2	0
8	Yes	375	Eliminated	2	0
25	Yes	400	Eliminated	2	0
24	Yes	400	Eliminated	1	0
27	No	850	Eliminated	2	0
4	Yes	400	Decreased	2	1
9	?	450	Decreased	3	3
26	No	390	Decreased	1	1
7	No	666	Unchanged	2	2

Auriculoventricular Nodal Tachycardia.—Of four patients with auriculoventricular nodal tachycardia, conversion was accomplished in two and transiently in a third. There was one patient (Case 8) with auricular fibrillation, auriculoventricular nodal tachycardia, and frequent ectopic ventricular beats. With the infusion of 100 mg. of procaine amide the ectopic ventricular beats were eliminated. Following the administration of 375 mg. of the drug, the patient's blood pressure fell from a control level of 94/62 to 38/0. There was loss of consciousness associated with convulsive movements. Phenylephrine hydrochloride, 5 mg., was given intravenously, but the pressure continued to fall to 22/0. At this time, 0.4 mg. of epinephrine was administered intravenously. The blood pressure promptly rose to 122/72, and the electrocardiogram revealed ventricular tachycardia, which lasted for only one minute and subsided spontaneously. The final rhythm was auricular fibrillation with auriculoventricular nodal tachycardia. The patient recovered consciousness. Death, several days later, was the result of his chronic pulmonary disease (Table 3).

TABLE 3.—*Results of Intravenous Procaine Amide Therapy in Four Patients with Auriculoventricular Nodal Tachycardia*

Case*	Digitalis Toxicity	Total Dose Procaine Amide, Mg.	Effect
2	Yes	300	Conversion to auricular fibrillation with conduction
13	Yes	300	Conversion to auricular fibrillation with conduction
6	Yes	160	Conversion to sinus rhythm with conduction for about 1 hour Reversion to slower auriculoventricular nodal tachycardia
8	Yes	375	No effect

* In cases 6 and 8 ectopic ventricular beats were eliminated during procaine amide infusion.

Auricular Fibrillation with Auriculoventricular Conduction and Ventricular Rates Over 115 per Minute.—Of five patients in this group, auricular fibrillation[5] persisted in all, and rapid ventricular rates were not altered in four after administration of from 400 to 1,000 mg. of procaine amide. In one patient (Case 20), after the administration of 400 mg. of procaine amide and coincident with severe hypotension, the electrocardiogram revealed persistence of auricular fibrillation with auriculoventricular conduction and marked slowing of the ventricular rate (from 130 to approximately 50 per minute). In addition, there were short periods of auriculoventricular nodal rhythm. Whether hypotension with secondary cardiac effects or the direct effect of procaine amide accounted for the change in the ventricular rate and in the rhythm cannot be ascertained.

---

[5] Auriculoventricular conduction in these patients contrasts with that of other patients in whom auricular fibrillation was associated with auriculoventricular nodal or ventricular tachycardia.

TABLE 4.—*Results of Intravenous Procaine Amide Therapy in Seven Patients with Auricular Fibrillation Associated with Auriculoventricular Nodal or Ventricular Tachycardia*

Case	Total Dose Procaine Amide, Mg.	Effect on Auricular Fibrillation	Effect on Associated Arrhythmia
2	300	No change	Auriculoventricular nodal tachycardia converted to auricular fibrillation with conduction
13	300	No change	Auriculoventricular nodal tachycardia converted to auricular fibrillation with conduction
8	375	No change	Auriculoventricular nodal tachycardia not effected. Ectopic ventricular beats eliminated
23	340	No change	Ventricular tachycardia converted to auricular fibrillation with conduction
28	60	No change	Ventricular tachycardia converted to auricular fibrillation with conduction
18	400	Sinus rhythm	Ventricular tachycardia converted to sinus rhythm
29	800	Sinus rhythm	Ventricular tachycardia converted to sinus rhythm

Auricular Fibrillation Associated with Auriculoventricular Nodal or Ventricular Tachycardia.—Auricular fibrillation was associated with auriculoventricular nodal or ventricular tachycardia in seven patients already considered. Auricular fibrillation persisted in five of these patients. There were two patients (Cases 18 and 29) who were known to have had auricular fibrillation prior to the onset of ventricular tachycardia. The rhythm present in each of these two patients after procaine amide administration was normal sinus rhythm (Table 4).

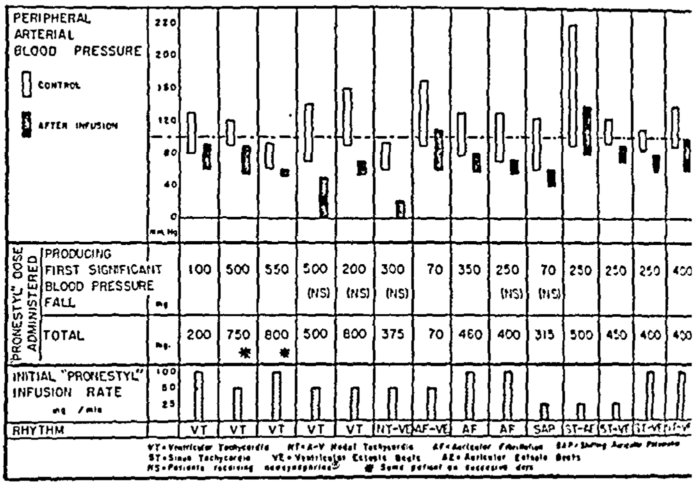
TABLE 5.—*Results of Intravenous Procaine Amide Therapy in Thirteen Patients with Miscellaneous Supraventricular Tachycardias*

Case	Total Dose Procaine Amide, Mg.	Arrhythmia Treated	Effect
12	315	Rapid shifting auricular pacemaker	Slowed
21	550		Slowed
(7)	666		No change
5	500	Ectopic auricular beats	Decreased number
(15)	400		
17	700	Auricular flutter	Slowed (no increase in auriculoventricular block)
31	550	Auricular flutter	Unchanged (increase auriculoventricular block)
(6)	160	SAT *	No change
(26)	390	SAT	No change
(9)	450	SAT	No change
11	1,000	SAT	No change
(22)	500	SAT	Slowed
(24)	400	SAT	Slowed

( ) = Patient already considered.
* SAT = sinoauricular tachycardia.

Miscellaneous Supraventricular Tachycardias.—While intravenously administered procaine amide appeared to have some effect on a variety of supraventricular arrhythmias, as noted in Table 5, this effect was usually transient and appeared to be of some therapeutic significance in only a few patients (Table 5).

Other Electrocardiographic Changes Caused by Procaine Amide Infusion.—Alterations in the electrocardiogram other than those related to conversion of arrhythmias or to changes in rate were produced by intravenous administration of procaine amide in 5 of 33 patients and were presumably indicative of toxicity. In four patients (Cases 25, 24, 14, and 3), QS intervals were prolonged by 0.02 to 0.04 second during administration of 300 400, 460, and 800 mg. of the drug (from 0.08, 0.10 0.12, and 0.20 second to 0.11, 0.13, 0.14, and 0.24 second respectively). Repeated short periods of ventricular asystole of not more than one second's duration occurred transiently in one patient (Case 13), who had auricula fibrillation with a ventricular rate of approximately 100 one minute after conversion of auriculoventricular nodal tachycardia with 200 mg. of procaine amide. Significan prolongation of QT intervals or decrease in voltage o QRS or T waves was not noted. The drug was used without obvious deleterious effects in a few patients with aberrant conduction, bundle branch block, and complete heart block.



Effects of procaine amide ("pronestyl") on blood pressure of 13 patients.

HYPOTENSIVE EFFECTS

A marked fall in systolic and diastolic arterial blood pressure associated with untoward signs and symptom occurred in 13 of 33 patients (see chart). The untoward effects included weakness and malaise (in six patients) profuse sweating (in four), vomiting (in three), thirs (in two), convulsive movements (in two), and loss o consciousness (in one patient). In 10 additional patients blood pressure falls greater than 20 mm. Hg systolic (average 29± 6.5 mm. Hg) in all, and in 6 of these 10 diastolic falls of greater than 15 mm. Hg (average 22± 4.2 mm. Hg) occurred without untoward signs or symptoms, during procaine amide infusion. There was no apparent relation between the incidence of blood pressure fall and the age of the patient or type of underlying heart disease. Hypotension occurred in patients with and without congestive heart failure.

The chart illustrates that blood pressure fall, often to levels considerably below 100 mg. Hg systolic, occurred in patients with relatively high, normal, and low control levels, and in patients with ventricular and supraventricular tachycardia. Blood pressure fall occurred with procaine amide infusion rates of 25, 50, and 100 mg. per minute in response to total doses averaging less than 500 mg. The duration of procaine amide-induced hypotension varied from a few minutes to several hours. In five of the patients noted in the chart, intravenous administration of phenylephrine hydrochloride in doses of 2 to 5 mg. successfully counteracted procaine amide-induced hypotension, at least temporarily. However, hypotension persisting after administration of procaine amide, in spite of phenylephrine therapy, contributed to the death of one patient. It should be mentioned that this patient (Case 20) with known hypertensive arteriosclerotic heart disease had severe hypotension, below 100 mm. Hg systolic, for 25 minutes before phenylephrine was administered.

There was no significant correlation between abolition of ventricular tachycardia, ectopic ventricular beats, or auriculoventricular nodal tachycardia and antecedent drug-induced blood pressure fall. Of six patients in whom conversion of ventricular tachycardia was accomplished during procaine amide infusion, only one showed a prompt rise in blood pressure following the conversion. Significant hypotension occurred in one additional patient (Case 33) not included in the chart. Abolition of intermittent ventricular tachycardia was accomplished in this patient after administration of 240 mg. of procaine amide, infused at a rate of 40 mg. per minute. However, because of the persistence of ectopic ventricular beats, procaine amide infusion was continued by intravenous drip at a slightly slower rate. By the 30th minute, blood pressure had fallen from a control level of 70/50 to 60/40. The latter level persisted and appeared to be well tolerated for the next 20 minutes. At the 50th minute blood pressure was unobtainable and the patient was observed to be pallid and sweating profusely. At this time the patient had received 1,200 mg. of procaine amide. After the administration of 5 mg. of phenylephrine subcutaneously, the pressure rose to 60/50. Procaine Amide infusion at approximately 10 mg. per minute was continued to a total dose of 1,500 mg. By the second hour after the start of therapy with the latter drug, the blood pressure was stabilized at 110/60.

PROCAINE AMIDE IN BRONCHIAL ASTHMA

Procaine amide was administered to four patients with a known history of bronchial asthma. Two of these, treated during asthmatic attacks with intravenously administered procaine amide, suffered profound hypotension associated with convulsive movements. In a third patient, an acute asthmatic attack developed after the administration of 390 mg. of the drug, and in the fourth patient, an acute asthmatic attack occurred approximately 90 minutes after oral administration of 750 mg.

COMMENT

It is important to emphasize that while the hypotensive effect of procaine amide has been noted by others,[6] the intravenous administration of 100 to 200 mg. per minute (that is, 1 to 2 cc. of undiluted procaine amide per minute) to a total dose of no more than 1,000 mg., recommended for clinical use by the manufacturers, appears to be excessive. In the present study, rates of administration between 25 and 100 mg. per minute to total doses between 70 and 800 mg. produced significant systolic and diastolic blood pressure falls. Furthermore, in spite of additional lowering of infusion rates below 25 to 100 mg. per minute, and in spite of periodic cessation of drug administration for several minutes at a time, hypotension, usually with symptoms of collapse, warranted complete cessation of drug administration in 40% of the patients after total doses averaging less than 500 mg. had been given. The mechanism of procaine amide-induced blood pressure fall was not revealed by available data.

While drug-induced blood pressure fall was a serious hazard, intravenously administered procaine amide was effective in the management of ventricular tachycardia, ectopic ventricular beats, and auriculoventricular nodal tachycardia. Furthermore, the combination of intravenous and oral procaine amide therapy proved to be highly effective in the management of ventricular and auriculoventricular nodal arrhythmias attributed to digitalis toxicity. Although a specific study of the effects of oral procaine amide administration is not yet complete in this laboratory, marked hypotension attributable to the oral preparation has not been encountered in any of more than 40 treated patients. In a few patients nausea and vomiting developed and occasionally "light headedness" or "heavy headedness." Significant prolongation of QS and QT intervals in two patients and development of complete heart block from incomplete heart block in one patient while receiving maintenance oral procaine amide therapy has been observed.

SUMMARY AND CONCLUSIONS

Procaine amide ("pronestyl") was administered intravenously to 33 patients with ventricular and/or supraventricular arrhythmias. Arterial blood pressure and electrocardiographic changes were studied. Initial procaine amide infusion rates between 25 and 100 mg. per minute were employed. Infusions were slowed or stopped when indicated by hypotensive responses or conversion of arrhythmias.

Ventricular tachycardia was abolished in seven of eight patients. Multiple ectopic ventricular beats were eliminated in 8 of 12 patients and decreased in 3. Auriculoventricular nodal tachycardia was abolished in three of four patients. Effective drug doses ranged from 60 to 800 mg. Thirteen of 14 patients with ventricular or auriculoventricular nodal arrhythmias attributed to digitalis toxicity responded to intravenous administration of procaine amide and were generally well controlled by subsequent oral procaine amide therapy. Supraventricular arrhythmias, other than nodal tachycardia, were affected less strikingly than ventricular arrhythmias.

Systolic and diastolic blood pressure falls associated with signs and symptoms of collapse occurred in 14 of 33 patients. Blood pressure falls, often to levels considerably below 100 mm. Hg systolic, were not related to control blood pressure levels or to the type of arrhythmia present. Blood pressure fall occurred with procaine amide infusion rates of 25, 50, and 100 mg. per minute in response to total doses averaging less than 500 mg. Phenylephrine (neo-synephrine®), employed in six patients, successfully counteracted procaine-amide induced hypotension in five.

---

[6] Kinsman, J. M.; Clay, H. L.; Coe, W. S., and Best, M.
Amide (Pronestyl) in the Treatment of Disorders of Ca
Preliminary Report, J. Kentucky M. A. 4
P. J., and Clark, B. B.: A Comparative
ties of Procaine and Procaine Amide,
1950. Elek, S. R.: Practical
Arrhythmias, Arizona Med. 7:

Of four patients with bronchial asthma treated with procaine amide, two suffered profound hypotension associated with convulsive movements and in two (one after oral administration of the drug) acute asthmatic attacks developed.

Electrocardiographic changes presumably indicative of toxicity (prolongation of QS intervals) were rarely produced by intravenous procaine amide therapy. Repeated blood pressure determinations are more important than the electrocardiogram as a guide to safe procaine amide infusion rates and are essential in the proper clinical use of this drug.

The present results indicate that procaine amide infusion rates should be less than 100 mg. per minute. Because significant hypotension was produced in spite of slow procaine amide infusion rates, the drug should be administered by this route only to patients with susceptible arrhythmias when immediate conversion is highly desirable.

Heart Station, Boston City Hospital (Dr. Stearns).

METHOD OF INCREASING SENSITIVITY OF GLUCOSE TOLERANCE TEST

Herbert Berger, M.D., Staten Island, N. Y.

It is axiomatic that early discovery of disease is desirable. Diabetic-detection drives have been launched in an effort to discover early cases of this disease so that treatment can be instituted before dangerous complications occur. Since there is a definite familial tendency in this disease, it has been our custom to examine all siblings of diabetics under treatment at the clinic. Occasionally, we have discovered an unsuspected case, but, even more frequently, we have found such relatives normal by present testing methods, only to discover some years later that they were diabetics. On several occasions such discovery took place only when a serious complication of the disease appeared. Consequently, we have performed glucose tolerance tests on all close relatives over the age of 50 of diabetics in a further effort to discover early diabetes. While these efforts were slightly more salutary, there were still many patients with normal tests who subsequently developed diabetes.

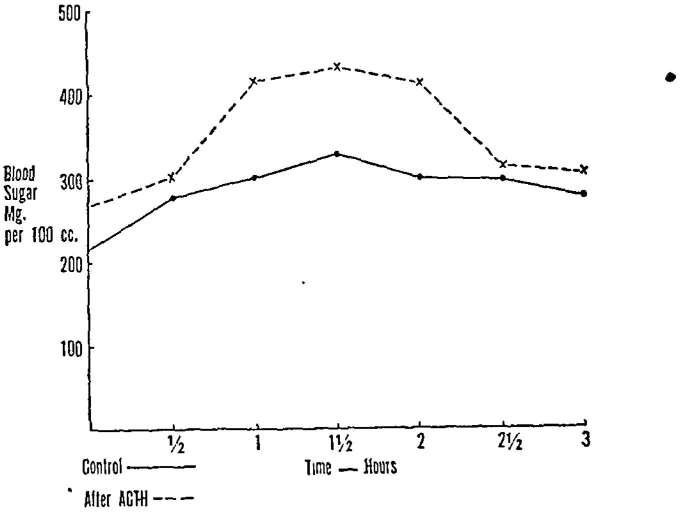


Chart 1.—Effect of corticotropin on the glucose tolerance tests of group *A*, known diabetics (composite of 12 cases).

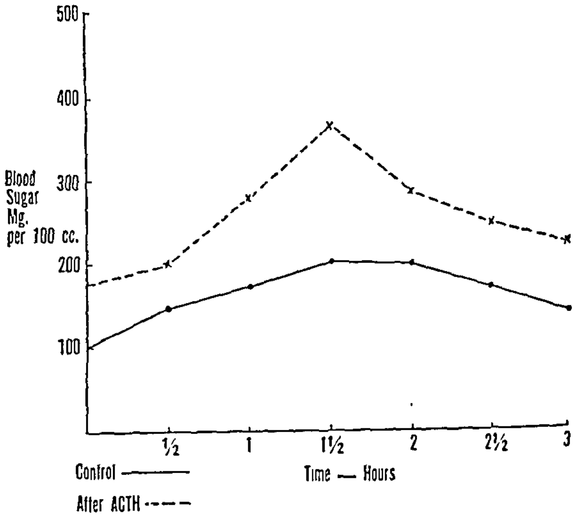


Chart 2.—Effect of corticotropin on the glucose tolerance tests of group *B*, siblings of known diabetics (composite of 14 cases).

Since potent active adrenal cortical extracts and corticotropin (ACTH) have become available, it has been observed that in many persons these substances are diabetogenic. This has rarely been of great clinical moment, but in the presence of preexisting diabetes the use of cortisone or of corticotropin has enormously aggravated the diabetic state. For example, one of our diabetics with rheumatoid arthritis required an increase in insulin from 10 to 60 units per day during the administration of 100 gm. of cortisone daily. Therefore, it seemed reasonable to suppose that, since cortisone was so diabetogenic, this material might serve to increase the sensitivity of the glucose tolerance test and thereby make the earlier detection of potential diabetics feasible.

Method.—Each patient was given two glucose tolerance tests. The first followed the usual technique in that 100 mg. of glucose was given by mouth to the fasting patient. Blood sugar determinations were made at 30 minute intervals for three hours. The second test was

---

From the Medical Service of the Berger Clinic, Richmond Memorial Hospital, and U. S. Public Health Hospital, Staten Island.

Medical Director of the Berger Clinic, Chief of Medicine at Richmond Memorial Hospital, Consultant in Medicine at U. S. Public Health Hospital, Staten Island (Marine Hospital).

Dr. Anna Tendlau and Miss Eunice Miles supervised the tests done at the Richmond Memorial Hospital. Those at the U. S. Public Health Service Hospital (Marine Hospital) were done by Drs. Charles Naegel, Frederick Regan, and Nicholas Gallucci under the direction of Dr. Alfred Doerner, Chief of the Medical Service.

identical, except that the patient received 100 mg. of corticotropin subcutaneously one hour before the test. In this way each patient would serve as his own control. The patients studied were divided into four groups as follows:

Group A. Known diabetics over age 50—12 patients.

Group B. Fourteen siblings over age 50 of known diabetics.

Group C. Patients over the age of 50 without diabetes or a diabetic family history—18 patients.

Group D. Same as Group C, but under age of 30—six patients (to rule out unknown possible potential diabetics in Group C).

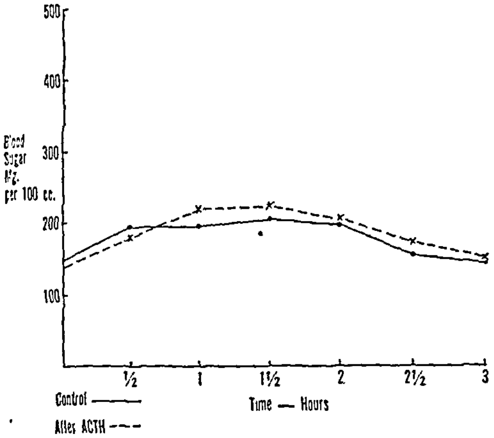


Chart 3.—Effect of corticotropin on the glucose tolerance tests of group *C*, nondiabetics (composite of 18 cases). It can be noted that corticotropin does increase the levels moderately, but not to a significant extent.

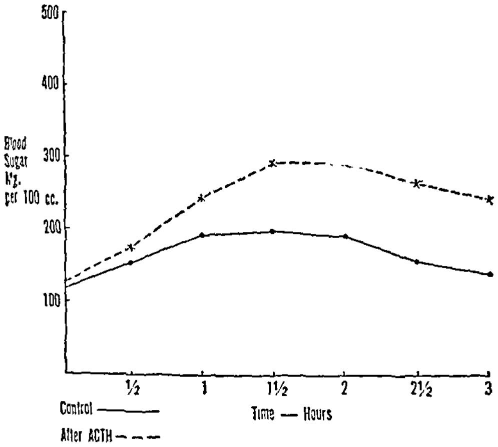


Chart 4.—Effect of corticotropin on the glucose tolerance test of one person in group *C*, a patient with a positive reaction.

Definition.—A positive test was one in which there was (in the corticotropin test) a failure of the blood sugar to return to normal in three hours and/or an increase in the intermediate blood sugar determinations over the figures obtained in the control test without corticotropin.

Results.—The tests of the Group A subjects, 12 known diabetics, all were positive.

The Group B subjects, 14 siblings of known diabetics, all had positive tests in that the blood sugar failed to return to normal in three hours, and the intermediate levels were higher.

The Group C subjects, 18 patients without diabetes or a diabetic family history, all had negative tests, except for one patient with a positive test.

In Group D, one of the six normal persons under age 30 had a positive test in that the intermediate blood sugars were all higher with corticotropin than without it. However, the three-hour sample was normal (i. e., the same as at the onset of the test).

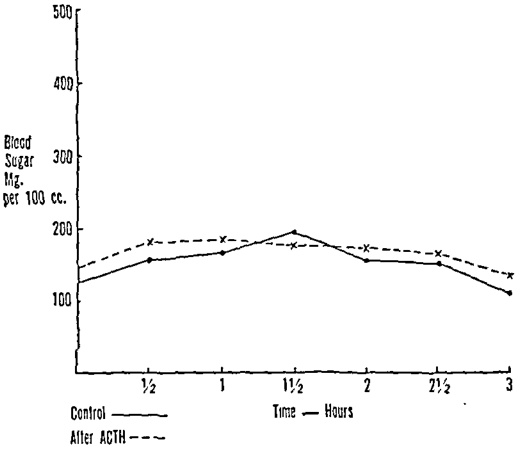


Chart 5.—Effect of corticotropin on the glucose tolerance tests of group *D*, young nondiabetic patients (composite of 6 cases).

COMMENT

It would seem that the siblings over 50 years old of diabetics (Group B), even though their urinalyses and glucose tolerance tests are normal, are potentially diabetics, since the 14 patients tested gave uniformly positive tests with corticotropin. Only the passage of time will verify this hypothesis. Needless to say, they will be followed for as many years as possible to determine whether or not clinical diabetes will eventually ensue.

Since corticotropin is a diabetogenic hormone, it was not surprising to see the uniform increase in the blood sugar levels in Group A of known diabetics. Since these glucose tolerance tests were positive without the corticotropin, its addition merely raised the blood sugar levels.

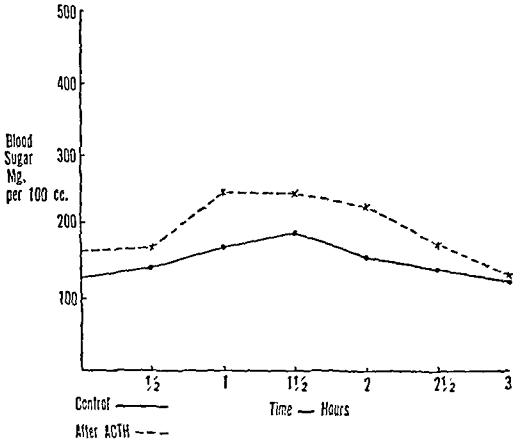


Chart 6.—Effect of corticotropin on the glucose tolerance test of one person in group *D*, a young nondiabetic patient with a positive test.

One of our 50-year-old normal control subjects (Group C) had a markedly positive test. This suggests that he may be a potential dia family history. Time will tell. However, since this age group is more prone to diabetes, it was later decided to introduce Group D, consisting of younger patients who would be less likely to be clinical diabetics since all were under 30 years of age. However, to our surprise, one of this group gave a partially positive test, i. e., the blood sugar rose 80 points higher with corticotropin, although it did return to normal in three hours. No wholly satisfactory explanation is offered for this bizarre result. It may be a weakness in the test, or this young man, under treatment for a fractured femur, may be undergoing a stress situation or be a potential diabetic, too. Efforts will be made to follow him as well.

SUMMARY

These results suggest that the sensitivity of the glucose tolerance test may be increased by the use of corticotropin. We have not proved this point. Perhaps we can do that with appropriate follow-ups 5 to 10 years hence.

CONCLUSIONS

1. The administration of 100 mg. of corticotropin prior to a standard glucose tolerance test increased the blood sugar level determinations of a group of siblings of known diabetics, as well as those of the diabetics themselves.
2. Except in two instances, the corticotropin did not affect the curves of normal persons without a family history of diabetes.
3. These findings suggest that corticotropin administered before a standard glucose tolerance test may reveal potential diabetics not discoverable by other means.

7440 Amboy Rd.

CLINICAL NOTES

MENINGITIS DUE TO LISTERIA MONOCYTOGENES

REPORT OF TWO CASES

Felix G. Line, M.D.
and
William B. Cherry, Ph.D., Knoxville, Tenn.

Meningitis due to Listeria monocytogenes is a rare disease. The first cases were reported by Burn[1] in 1936. Kaplan,[2] in a review of the literature to 1945, stated that the number of cases from which this organism had been isolated and identified was 23, of which 13 were cases of meningitis. Handelman and others[3] reported a case with recovery in a 6-week-old infant using penicillin and sulfadiazine. Martin and others[4] reported the case of a 57-year-old man in France who died despite penicillin and sulfonamide therapy. Van Driest[5] and Slooff[6] in the Netherlands reported two cases in newborn infants both of whom recovered after receiving penicillin and sulfadiazine. A 3-week-old infant was treated successfully by Beute and his colleagues[7] in the Netherlands, using sulfadiazine. Stanley[8] in Australia isolated L. monocytogenes postmortem from the cerebrospinal fluid of a 79-year-old woman. A 32-year-old male was treated successfully by Berry[9] with penicillin, sulfadiazine, and streptomycin. Thus, there have been 20 reported cases to date.

We wish to report a fatal case in a newborn infant and a second case in a newborn infant treated successfully using aureomycin and penicillin as the principal treatment. To our knowledge, this is the first reported case of L. monocytogenes meningitis successfully treated with aureomycin.

CASE REPORTS

CASE 1.—R. E., a white female infant, was born at St. Mary's Hospital on Oct. 1, 1950. The pregnancy and delivery were normal. The infant developed thrush on Oct. 5 and was isolated for the remainder of her hospital course. This infant and the infant whose case is reported below were in the large nursery together for a period of 24 hours and were cared for by the same nurses during this time. The mothers of both infants occupied adjoining private rooms and shared a common bathroom between them. The infant was discharged from the hospital on Oct. 8 at which time the examination showed no abnormality. She was readmitted to the hospital on Oct. 12 with a history of rapid breathing and absence of crying for a period of 24 hours. She was said to have had intermittent vomiting and a few loose stools since dismissal from the hospital. The family lived on a farm and came into contact with farm animals.

Rectal temperature was 103 F. The infant was acutely ill, had shallow and rapid respirations, was slightly cyanotic, and would not cry when stimulated. There were crepitant rales anteriorly and posteriorly in the left part of her chest. There was moderate dehydration. The throat showed intense hyperemia. On the following day the fontanel was tense and the head was retracted.

Lumbar puncture on Oct. 13 revealed about 10 cc. of cloudy, greenish-colored fluid under increased pressure. The white cell count on the spinal fluid showed 12,600 per cubic millimeter with 74% polymorphonuclear leucocytes and 26% lymphocytes; sugar was 33 mg. per 100 cc.; chlorides 770 mg. per 100 cc.; protein was 400 mg. per 100 cc. A few gram-positive rods were seen on direct smear. Culture subsequently revealed L. monocytogenes. The white blood cell count was 20,600 per cubic millimeter with 62% polymorphonuclear leucocytes, 28% lymphocytes, and 10% monocytes. Urinalysis showed albumin (3+), but was otherwise negative.

Treatment on admission consisted of penicillin, 30,000 units every three hours, continuous oxygen, and hypodermoclyses to correct the dehydration. On Oct. 13, following the lumbar puncture, sulfadiazine 5 grains (0.30 gm.) every four hours and dihydrostreptomycin, 50 mg., every three hours were administered.

The initial temperature of 103 F. fell to 99.6 F. during the first 24 hours where it remained until death. The respirations improved slightly but the cyanosis became worse. After lumbar puncture on Oct. 13, the patient was transferred to the contagious unit of Knoxville General Hospital, but she died en route. Postmortem examination was not granted.

Case 2.—C. D., a white girl, was born at St. Mary's Hospital Oct. 3, 1950. The pregnancy, delivery, and neonatal course were entirely uneventful, and the infant was discharged home on Oct. 7, 1950. Physical examination at that time revealed no abnormalities. On Oct. 9, the mother noted that the infant was more irritable than previously and on the following day during the bath, there was a sudden attack of cyanosis. Respirations ceased for a few minutes and artificial respiration was given by a neighbor. The color returned to normal in about five minutes

---

Dr. W. R. Cross gave permission to report the case of R. E.
Consultant in Bacteriology, St. Mary's Memorial Hospital (Dr. Cherry).

Dr. George S. Mahon, Pathologist, aided this study by making available to us the facilities of the pathological laboratories of St. Mary's Memorial Hospital.

Our identification of the culture of patient C. D. was confirmed by Dr. Martha K. Ward, Communicable Disease Center, United States Public Health Service, Chamblee, Ga.

and the infant was taken back to the hospital, where she was readmitted.

Rectal temperature was 101.2 F. The infant was acutely ill, extremely irritable, and had a jerky type of respiration. The slightest stimulation caused a shrill cry. The fontanel was not bulging and the neck and back were not stiff. There was a transient upward nystagmus bilaterally.

Lumbar puncture on admission revealed grossly cloudy and xanthrochromic fluid under normal pressure. The white cell count on the spinal fluid was 2,641 per cubic millimeter with 76% polymorphonuclear leucocytes and 24% lymphocytes; sugar was 20 mg. per 100 cc.; chlorides, 621 mg. per 100 cc.; protein, 300 mg. per 100 cc. A smear and gram stain of the spinal fluid revealed no organisms. Subsequent culture of the spinal fluid showed a gram-positive bacillus which later was identified as L. monocytogenes. A repeat lumbar puncture on the third day of the illness revealed on culture a gram-positive bacillus, but four subsequent punctures were negative on smear and culture. The spinal fluid sugar gradually returned to normal over a three-week period, but the protein was still 170 mg. per 100 cc. three weeks after the onset of the illness.

An x-ray of the chest on admission was negative. The white blood cell count on admission was 22,550 per cubic millimeter, 10,250, two days after admission and 9,500, 11 days after admission. The red blood cell count on admission was 5,250,000 and remained within normal limits throughout the illness. Hemoglobin was 15.5 gm. and remained normal. All urinalyses were negative.

After the lumbar puncture, the infant was transferred to the contagious unit of Knoxville General Hospital. Penicillin, 50,000 units every three hours, chloramphenicol, 50 mg. every three hours, and dihydrostreptomycin, 50 mg. every six hours, were administered. Because of the critical condition of the patient, it was decided on the second day to increase the penicillin to 100,000 units every three hours and to begin sulfadiazine by mouth, 2 grains (0.12 gm.) as the first dose, followed by 1 grain (60 mg.) every six hours. By mistake, the cerebrospinal fluid was reported positive for H. influenzae and one dose of 25 mg. of streptomycin was given intrathecally. However, by the third day the mistake was corrected, and the culture was reported positive for L. monocytogenes. On Oct. 13, the sensitivity of the organism to the various drugs was reported with the following results: "very sensitive" to aureomycin, "sensitive" to penicillin, "moderately sensitive" to chloramphenicol, and "resistant" to dihydrostreptomycin. A later test of the sensitivity of the organism to sulfadiazine revealed that growth was not inhibited to 100 mg. per 100 cc. On Oct. 13, chloramphenicol was discontinued, and aureomycin, 100 mg., was given as the first dose, followed by 50 mg. every three hours. On Oct. 15, the dihydrostreptomycin was discontinued, and on Oct. 17, the sulfadiazine was discontinued. The sulfadiazine blood level on Oct. 13 was 13 mg. per 100 cc. Penicillin therapy was discontinued on Oct. 24 after this drug had been given for 14 days. The dosage of aureomycin was reduced to 25 mg. every three hours on Oct. 19, and was discontinued on Nov. 2 after this drug had been given for 20 days.

The temperature of 101.4 F. gradually subsided during the first 48 hours and was normal throughout the remainder of hospitalization. During the first four days the infant was acutely ill, was extremely drowsy, nursed very poorly, tended to lie in opisthotonos position, and at times appeared quite rigid. After the fourth day, she became more alert, but her eyes tended to rove aimlessly for a week longer. The cry then became stronger and she nursed more vigorously. Vomiting became a troublesome symptom on Oct. 17, but this was considered a side effect of the aureomycin. After reducing the dosage the severity of the vomiting decreased.

The weight on admission was 6 lb. 10 oz. (3,004 gm.), on Oct. 20 was 6 lb. 4 oz. (2,835 gm.), and on discharge from the hospital (Oct. 28) was 6 lb. 11 oz. (3,032 gm.). Since leaving the hospital there has been a steady weight gain and at the age of 10 weeks the weight was 12 lb. 1 oz. (5,471 gm.). There are no apparent neurological changes other than a slight downward deviation of the right eye and at times a fine vertical nystagmus. The state of nutrition is good, and growth has been unusually rapid.

BACTERIOLOGY

Isolation.—Aliquots of the sediment of the centrifuged spinal fluids were cultured on blood agar, chocolate agar, and in brain-heart infusion broth both in air and in an atmosphere of increased carbon dioxide, i. e., in a candle jar. Moderately heavy growth was obtained in all cultures under both conditions. Direct microscopic examination of the spinal fluid sediment revealed the presence of small numbers of organisms with the morphology of Listeria in one case only (R. E.). Subcultures were prepared by fishing well-isolated colonies from the blood plates to brain-heart infusion agar slants. Subsequently, these cultures were replated and single colonies selected for further study. All bacteriological work was carried out with the latter cultures.

Morphology.—The bacteria obtained in pure culture from the spinal fluids of both infants were gram-positive rods with rounded ends. The width of the rods was about 0.5 μ and they varied in length from 0.5 to 2.0 or 3.0 μ. They exhibited the characteristic tendency of many bacteria of the family Corynebacteriaceae to arrange themselves in parallel groups; many pairs of bacteria remained attached to each other at sharp angles after cell division. There was little tendency for the organisms to stain irregularly even with Löffler's alkaline methylene blue. Spores were not produced and capsules were not seen under the cultural conditions used. The bacteria were not acid fast. In older cultures, especially in broth, there was some tendency toward formation of chains. Characteristic motility was apparent in semisolid agar at 37 C. in the form of sluggish spreading away from the line of stab of the inoculum into the medium. Observations of eight-hour broth cultures in hanging drop preparations showed the organisms to be motile and to have a definite end-over-end rolling motion.

Physiology.—All cultures grew well on blood agar, chocolate agar, and brain-heart infusion media. After 24 hours on blood agar the colonies were gray, flat with somewhat irregular margins, and 1 to 2 mm. in diameter. No hemolysis was apparent until the colony was scraped away from the agar surface. This revealed a zone of beta hemolysis beneath the colony and corresponding in size to that of the colony. Growth occurred both at 37 C. and at 22 C.

---

1. Burn, C. G.: Clinical and Pathological Features of Infection Caused by New Pathogen of Genus Listerella, Am. J. Path. **12**: 341-348 (May) 1936.

2. Kaplan, M. M.: Listerellosis, New England J. Med. **232**: 755-759 (June 28) 1945.

3. Handelman, N. I.; Rotondo, C. C.; Scott, E. P., and Knighton, H. T.: Listerella Meningitis: Report of Case with Recovery, J. Pediat. **28**: 210-213 (Feb.) 1946.

4. Martin, R.; Sureau, B.; Millet, A., and Quelin-Rimetz, (Mme.): Méningite humaine à Listerella monocytogenes: Traitement sulfamido-pénicilline; Echec, Bull. et mem. Soc. méd. hôp. Paris **63**: 468-471 (June 6) 1947.

5. van Driest, G. W.: Meningitis and Sepsis in Newborn Due to Listerella Monocytogenes: Case, Maandschr. kindergeneesk. **16**: 101-109 (April) 1948.

6. Slooff, J.: Meningitis Caused by Listerella Monocytogenes in Newborn: Case, Maandschr. kindergeneesk. **16**: 109-110 (April) 1948.

7. Beute, A. E.; Meyler, L., and Sirks, J. L.: Human Listerellosis in Netherlands, Nederl. tijdschr. geneesk. **92**: 2229-2236 (July 24) 1948.

8. Stanley, N. F.: Listeria Meningitis: Description of Strain of Listeria Monocytogenes and Report of Case, M. J. Australia **2**: 205-208 (Aug. 21) 1948.

9. Berry, J. F.: Listerella Monocytogenes Meningitis: Report of Case, U. S. Armed Forces M. J. **1**: 894-897 (Aug.) 1950.

The two cultures studied gave identical reactions when inoculated into test media consisting of a proteose-peptone base medium to which was added sufficient amounts of each substrate to give a final concentration of 0.5%. The base medium was tubed and sterilized while the substrates were sterilized separately in 10% concentrations by autoclaving at 117 C. for 12 minutes. All fermentation tests were incubated at 37 C. for 24 hours, at which time the first readings were made and then reincubated and read periodically until the final reading on the 12th day. Under these conditions the following results were obtained:

Glucose, salicin, xylose, and maltose gave prompt and definite acid production.

Dextrin, rhamnose, inulin, galactose, lactose, and glycerol either gave an initial acidity which reverted to alkalinity after about one week or gave a permanent slight acid reaction.

Sucrose, dulcitol, mannitol, inositol, and arabinose were not fermented.

There was no evidence of gas production in any of the above media.

Additional biochemical tests were carried out with the following results: Litmus milk was rapidly reduced near the bottom of the tube while some acidity developed near the top. No coagulation or precipitation of milk proteins was evident. No further change occurred except that the reduced litmus became reoxidized after several days. Nutrient gelatin was not liquefied after 12 days at 37 C., although growth of the organisms was evident. The methyl red test was positive after 48 hours but the production of acetyl-methyl-carbinol could not be demonstrated. Nitrates were not reduced to nitrites; indole and hydrogen sulfide were not formed; catalase was produced.

Susceptibility to Antibiotics and Sulfadiazine.—The routine method which is used in this laboratory to determine relative susceptibility of bacteria to antibiotics consists of placing tablets of standard amount of each antibiotic on the surface of previously inoculated blood plates and placing in the refrigerator for about one hour. The plates are then incubated for 24 hours at 37 C. and readings of the relative sensitivities of the bacteria to the antibiotics are made. This procedure is not very accurate insofar as an absolute determination of susceptibility is concerned but is a rapid and useful guide for antibiotic therapy. Such tests when applied to the two Listeria cultures indicated that these organisms were quite sensitive to penicillin, extremely sensitive to aureomycin, moderately sensitive to chloramphenicol and resistant to streptomycin

Both Listeria cultures were found to be resistant to sodium sulfadiazine in concentration ranging from 1 to 100 mg. per 100 cc. when tested by the broth dilution method. The upper limit of resistance was not determined since 100 mg. per 100 cc. is far above the practical therapeutic level.

Serology.—Serum was obtained from one of the infants (C. D.) four weeks after the beginning of the illness and a test for heterophile antibody gave negative results. The serum was also tested for the presence of agglutinins active against cultures of Listeria isolated from both infants. The bacteria were grown in both brain-heart infusion broth and in trypticase soy broth. After 15 hours incubation cultures in both media were motile and showed heavy growth. They were formalinized by the addition of an amount of 0.6% formalin in 0.85% isotonic sodium chloride solution equal to the volume of the culture itself. Serum was added to 1.0 cc. amounts of each of the two antigens grown in each of the two media to give final serum concentrations ranging from 1:10 to 1:500. The agglutination tests were incubated at 37 C. for four hours and then placed in the refrigerator overnight, after which the final readings were made. Agglutination of a granular type usually associated with the somatic antigens rather than flagellar antigens was apparent in the lower serum dilutions by the end of the primary incubation period. The results of the tests are given below:

Results of Agglutination Tests of Listeria Antigens with Serum from an Infected Infant (C.D.)

	Reciprocal of Serum Dilutions				
Antigen	10	50	100	200	500
Patient C. D.					
Trypticase Soy	++++	+++	+	+	–
Brain-Heart Infusion	+++	+	±	–	–
Patient R. E.					
Trypticase Soy	++++	+++	++	±	–
Brain-Heart Infusion	–	–	–	–	–

Control: A *normal rabbit serum* diluted 1:10 was used as a control and gave no agglutination. Serum obtained from the mother of C. D. also gave negative results when tested at all dilutions used above.

Pathogenicity.—Two guinea pigs were inoculated intraperitoneally with approximately 10^2 and 10^5 bacteria respectively, from an 18-hour broth culture of the C. D. isolate. These animals did not show any gross symptoms or evidences of infection.

One drop of a young broth culture of the C. D. isolate was instilled into the conjunctival sac of a rabbit. Within 24 hours severe inflammation of the conjunctivas was apparent and a purulent exudate was forming. By 48 hours the eyelids were matted together with pus and upon being softened with isotonic sodium chloride solution and opened, revealed severely inflammed and injected conjunctivas. On the third day the animal was given aureomycin subcutaneously and the eye was cleansed and soaked in aureomycin saturated gauze.

After this the animal made an uneventful recovery, and within a week the eye had cleared except for some slight injection of blood vessels. As far as could be determined from gross examination there was no damage to the cornea.

Later, this animal received an intraperitoneal injection of approximately 10^5 bacteria of the C. D. strain. On the third day following this injection smears were made of blood from the marginal ear vein. Four days after the first injection the rabbit received another injection of about 10^7 bacteria of the same strain and smears were obtained on the third and seventh day following. The animal did not appear ill at any time.

Differential counts of the white cells in smears taken from the rabbit at different times after injection of the bacteria did not reveal any significant shift of the leucocyte picture from the normal.

The morphological, cultural, and physiological tests performed on the cultures isolated from two cases of infant meningitis indicate that these organisms may be identified as Listeria monocytogenes. Comparison of the characteristics of the two cultures which we have studied with those listed for L. monocytogenes in Bergey's "Manual of Determinative Bacteriology" (1948)[10] shows only slight differences. A survey of the literature[11] shows that Listeria are somewhat variable in their ability to attack various carbohydrate substrates. Moreover, great variations in pathogenicity for guinea pigs and rabbits have been demonstrated. Although only one of our strains (C. D.) was tested, 10^7 and 10^5 cells given intraperitoneally into a rabbit and guinea pig, respectively, failed to produce apparent infection. Even these doses are not as large as those required by Julianelle[11b] to establish infection in guinea pigs and rabbits with some of the Listeria cultures which he studied. In addition, intravenous administration of the organisms might have been much more effective in producing infection. The fact that characteristic ophthalmic reactions were produced by our cultures would seem to be the best criterion of pathogenicity and confirmation of the identification of these organisms as Listeria.

All tests carried out on the strains of Listeria isolated from the spinal fluids of the two infants indicated that the cultures were identical. Although the serological tests are incomplete, the agglutination of both strains by serum from the infant which survived indicates the close relationship of these bacteria. The influence of the composition of the medium in which the bacteria are grown upon their agglutinability is worthy of note.

COMMENT

L. monocytogenes is a gram-positive bacillus which has been isolated from patients who have infectious mononucleosis. It is still to be proved that this organism is the causative agent of infectious mononucleosis. It has been isolated from animals, but the part played by animals as a reservoir of infection for human beings is not known.

Although the epidemiology of the disease is not known, it is not without significance that these infants were born in the same delivery room within two days, that the family of the baby who died lived on a farm and was in contact with farm animals, that the mothers shared a common bath, and that the infants were in the nursery together for a period of 24 hours. Circumstances here were similar to those in the cases in two newborn infants reported by Burn.[1]

The resistance of this organism in our cases to sulfadiazine is in accordance with the experience of Berry.[9] Handelman,[3] on the other hand, found that the drug of choice in his case was sulfadiazine and that the organism was quite resistant to penicillin.

Patient C. D. was treated initially with a multiplicity of drugs, but she showed no improvement clinically or bacteriologically until after the sensitivity tests were reported and aureomycin was started. It is felt that aureomycin played the most important role in bringing about recovery.

SUMMARY

Two cases of meningitis due to Listeria monocytogenes in newborn infants are reported. The first patient died; the second patient recovered, when aureomycin and penicillin were used as the principal treatment.

ADDENDUM

Since this paper was submitted for publication, the family of the patient in Case 2 moved to another city, where an obstructive hydrocephalus developed and a Torkelston operation was performed. Postoperatively, the child developed pulmonary complications and expired at the age of nine months.

710 W. Hill (Dr. Line).

---

10. Breed, R. S.; Murray, E. G. D., and Hitchens, A. P.: Bergey's Manual of Determinative Bacteriology, ed. 6, Baltimore, Williams & Wilkins Company, 1948.

11. (*a*) Footnote 3. (*b*) Julianelle, L. A.: Biological and Immunological Studies of Listerella, J. Bact. **42**: 367-383 (Sept.) 1941. (*c*) Harvey, P. C., and Faber, J. E., Jr.: Studies on Listerella Group: Biochemical and Hemolytic Reactions, ibid. **42**: 677-687 (Nov.) 1941. (*d*) Topley, W. W. C., and Wilson, G. S.: Topley and Wilson's Principles of Bacteriology and Immunity, ed. 3, Baltimore, Williams & Wilkins Company, 1946, vol. 1. (*e*) Jordan, E. O., and Burrows, W.: Jordan-Burrows Textbook of Bacteriology, ed. 15, Philadelphia, W. B. Saunders Company, 1949, p. 900.

AMEBIC GRANULOMA OF THE RECTUM

Matthew W. Perry, M.D., Washington, D. C.

Reports of amebic granuloma in general, and of amebic granuloma of the rectum in particular, are relatively rare. Accordingly, the following case of amebic granuloma of the rectum is reported.

REPORT OF A CASE

D. B. F., a 49-year-old man was seen Aug. 3, 1949. He had recently returned from a trip to the Orient. He stated that he had first had symptoms of diarrhea in early July, while in Bagdad. His bowel looseness lasted a short while and then improved briefly. From then on he had recurrent spells of mild diarrhea with lower abdominal cramping pain. He had first observed the passage of bloody mucus only four days before consulting me.. On reaching this country he reported to the Division of Infectious Diseases of the National Institutes of Health, where his fecal material was found teeming with Endameba histolytica.

A physical examination revealed a liver palpable 7 cm. below the costal margin on deep inspiration, which was sensitive to palpation. There was some tenderness on palpation of the colon, particularly of the left colon; digital rectal examination disclosed a tumor mass, the size of an English walnut, in the right posterior part of the rectum. This tumor was located 7 cm. above the anus.

Proctoscopic examination revealed a bleeding mass of the above-mentioned size in the location as described. This mass had a broad base, was ulcerated and bleeding, and had the gross appearance of a malignant tumor. Proctoscopy beyond the mass to a level of 22 cm. revealed a few pinhead-sized areas of ecchymosis. There appeared to be no other abnormality.

Results of routine laboratory studies were negative. An ameba-complement-fixation test was reported negative by the National Institutes of Health. This test was repeated on Sept. 29, 1950, and was also negative. Biopsy of the tumor was made Aug. 8, 1949. Study revealed no evidence of cancer.

Microscopic Examination.—Sections through the larger piece of tissue revealed it to be covered by a mildly hyperplastic rectal mucosa which was polypoid in shape. The crypts of Lieberkuehn were regular and uniform. The connective tissue stalk was somewhat sclerotic and showed infiltration by chronic inflammatory cells. The smaller piece of tissue submitted was also polypoid, but associated with this piece was a mass of tissue infiltrated by a severe acute inflammatory reaction. The infiltrate consisted of an abundance of polymorphonuclear cells, but there were also many lymphocytes, plasma cells, and eosinophils. The eosinophils were most prominent in the fixed tissue, while the polymorphonuclear cells were most abundant in the superficial ulcerating membrane. Careful inspection of the large phagocytic cells failed to reveal the presence of inclusion bodies. No specific etiology was discernible from the section seen.

Treatment and Further Observations.—The patient was then treated with five daily injections of 1 grain of emetine hydrochloride; coincidently he received carbarsone, 0.25 gm. three times daily for one week. Carbarsone was discontinued for one week and then given for another week. On the completion of this course of carbarsone, the patient was given chloroquine, 9.6 grains (0.72 gm.) three times daily for 20 days.

Proctoscopic examination on Aug. 20, 1949, revealed no tumor, but there was slight thickening at the point the tumor had been seen. A proctoscopic examination on Aug. 30, 1949, revealed slight scarring and firmness of the submucosal tissue at the site of the tumor. The mucous membrane was intact. Examination of the stool for E. histolytica at the National Institutes of Health at this time gave negative results.

The patient was seen again Sept. 25, 1950. He stated that he had been entirely well. A proctoscopic examination revealed no abnormality in the rectum or sigmoid. There was no scar at the location of the amebic granuloma. Stool examinations at the National Institutes of Health disclosed no E. histolytica.

The liver was markedly reduced in size; it could be felt just beneath the costal margin at the end of deep inspiration. It was not tender to palpation.

SUMMARY

A case of amebic granuloma of the rectum is reported. The diagnosis is regarded as having been established by (1) the character of the tumor, (2) the presence of a great number of vegetative Endameba histolytica in the feces, and (3) the prompt disappearance of the tumor on antiamebic treatment.

1150 Connecticut Ave.

JARISCH-HERXHEIMER REACTION FOLLOWING PENICILLIN THERAPY IN CASE OF SYPHILITIC AORTITIS

John M. Butterly, M.D., Jamaica, N. Y.
and
Louis Fishman, M.D., Hightstown, N. J.

Penicillin has been widely employed in the therapy of cardiovascular syphilis during the past five years, and yet the occurrence of serious Jarisch-Herxheimer reactions remains controversial. Dolkart and Schwemlein [1] report two cases in which anginal episodes occurred in the course of penicillin treatment of cardiovascular syphilis. One occurred after 20,000 units had been administered in two doses of 10,000 units each in two days, the other on the fourth day after the administration of 700,000 units. The first case was complicated by rheumatic heart disease, and the second had had previous bouts of precordial pain. Use of penicillin was discontinued in both, but the assumption that these symptoms were produced by Jarisch-Herxheimer reactions due to penicillin is a tenuous one.

Diefenbach [2] reports a case of fatal Jarisch-Herxheimer reaction with sudden aneurysmal dilatation of the arch and descending aorta and consequent complete left bronchial occlusion in a Negro man, 75, with syphilitic aortitis treated with penicillin for pneumonia. Bronchoscopic and autopsy findings are reported. Moore [3] reported one case in which the patient treated with combined penicillin and malarial parasites died of heart failure four days after the completion of therapy. Autopsy revealed plaques of aortitis with large hemorrhages in each. Callaway and co-authors [4] reported the probable rupture of an aortic cusp in one of their patients several weeks after the completion of penicillin therapy. It seems fair to assume that the cases of Diefenbach and Moore are acceptable as Jarisch-Herxheimer reactions; however, the evidence that the case cited by Callaway and others is a true instance of therapeutic shock is uncertain and probably represents an instance of so-called therapeutic paradox.

In the light of present knowledge, it appears fairly certain that, in general, reactions to penicillin are less frequent and milder than to other forms of treatment for syphilis. Various reports mention small numbers of untoward reactions to penicillin in cases of late syphilis; but most of these are not of a serious nature, and many are of doubtful relationship.[5] On the other hand, Russek and others,[6] Hill,[5b] Tucker and Farmer,[7] and Flaum and Thomas [8] reported a total of 96 patients with cardiovascular syphilis treated with penicillin in whom no adverse reactions were noticed. Flaum and Thomas believe that the danger of Herxheimer reactions has been overemphasized, although they still advise the administration of bismuth before penicillin is used in patients who have received no previous antisyphilitic therapy. Edeiken and his co-workers [9] have treated 62 patients with cardiovascular syphilis initially with penicillin without untoward effects. Twelve of these patients were in a state of congestive failure at the time of institution of therapy.[10] These authors feel that strong evidence exists that penicillin has no injurious effects as initial therapy in cases of syphilis involving the cardiovascular system.

Although it is granted that the occurrence of Jarisch-Herxheimer reactions in cases of cardiovascular syphilis after penicillin therapy is probably unusual, the following case of a fatal reaction due to use of penicillin in a patient with syphilitic aortitis and involvement of the coronary ostia with subsequent myocardial infarction is reported in order to stress that such reactions may occur.

REPORT OF A CASE

I. K. a white woman, 43, was admitted to Queens General Hospital, to the service of Dr. A. Douglas, for the first time for complaints of exertional dyspnea and "dry" cough of one month's duration, complicated by feverishness 11 days prior to admission. Because of the cough and feverishness, a local physician administered 300,000 units of penicillin intramuscularly. Approximately six to eight hours following this, the patient complained of pain in the left scapula with radiation to the left shoulder and arm. The cough became productive, the dyspnea became progressively severer, and admission to the hospital was advised.

The past history was completely noncontributory; there had been no previous symptoms referable to the patient's cardiovascular system, and the occurrence of syphilis was denied.

From the Department of Medicine (Dr. James R. Reuling, Director) and the Department of Pathology (Dr. Alfred Angrist, Director), Queens General Hospital.

[1] Dolkart, R. E., and Schwemlein, G. X.: Treatment of Cardiovascular Syphilis with Penicillin, J. A. M. A. **129**: 515 (Oct. 13) 1945.

At admission the patient was a well-preserved 43-year-old white woman who was dyspneic, orthopneic, and cyanotic, well oriented, and cooperative. Head, eyes, ears, nose, throat, and neck were not remarkable; funduscopy findings were normal. The lungs were congested with bibasilar rales and complicated by pleural effusions, the left side of greater degree than the right. The heart beat was regular in rhythm with tachycardia at a rate of 120 per minute; the tones were good. The blood pressure was 110/80. An apical, rumbling, long, low-pitched presystolic murmur, without a thrill, and an aortic, early, high-pitched diastolic murmur were heard, as well as a diastolic gallop rhythm at the left lower sternal border. The liver was depressed 3 to 4 finger breadths below the umbilicus on inspiration. There was bilateral 2 + pretibial and pedal edema. The temperature was 100 F. The white blood count was 12,500, with 78% polymorphonuclears, and there was 13 gm. of hemoglobin. The blood urea nitrogen was 30 mg. per 100 cc. and the creatinine 2.2 mg. per 100 cc. Despite use of nasal oxygen, digitalis, and diuretic therapy, the patient became shock-like on the second day, and the blood pressure dropped to 100/60. By the third day the patient's condition had further deteriorated, and the blood pressure averaged 76/40. The aortic blowing murmur became more intense, and the apical presystolic murmur almost completely disappeared. A left thoracentesis was done, and 600 cc. of straw-colored fluid, with a specific gravity 1.008, was removed. Several electrocardiograms revealed a left strain pattern and changes suggesting posterior wall myocardial infarction. The Wassermann and Mazzini tests were positive, both 4 +. The diagnoses considered were syphilitic or rheumatic heart disease with aortic insufficiency and possible Austin Flint murmur. The possibility of a postpenicillin therapy Herxheimer reaction in a luetic heart with coronary ostial stenosis and myocardial infarction was proposed. The patient died on the third hospital day.

At autopsy the essential findings were limited to the cardiovascular system. Six hundred cubic centimeters of serous fluid was found in the left and 300 cc. in the right pleural cavities. The heart weighed 400 gm. There were scattered and confluent areas of fresh necrosis of the left ventricular myocardium, mainly in the region of the interventricular septum and posterior wall, and old fibrotic changes throughout the entire left ventricular myocardium. No localized massive infarction was noted. The left ventricle was 12 to 14 mm. thick throughout; the remaining chambers revealed no dilatation or hypertrophy. The tricuspid and pulmonary valves were natural. The mitral valve had a slight thickening of the free edge of its cusps with normal chordae tendineae. The aorta was not widened. The aortic cusps were so thickened and shortened that they were dimpled and rolled. The commissures between the cusps were widened to approximately 3 mm. and considerably thickened. Considerable thickening and narrowing around both coronary ostia was apparent, especially about the left, almost obliterating its opening. The area surrounding the coronary ostia showed considerable edema. The proximal portions of the coronary arteries showed minimal sclerosis; the distal portions were without sclerosis. No occlusion or thromboses were present. Throughout the ascending aorta there were small areas of punched-out intimal lesions of a greyish-white appearance. Considerable calcification of the ascending thoracic aortic intima was noted. The intimal changes extended down to the superior mesenteric artery ostium and stopped abruptly over an area of approximately 3 to 4 mm. The remaining part of the aorta was normal. There was a slight aneurysmal dilatation of the ascending thoracic aorta in which tree-barking was noted. Thickening of the aortic adventitia was present. The microscopic sections of the myocardium confirmed the gross findings of scattered old fibrosis and fresh areas of necrosis with polymorphonuclear infiltration. The aortic sections revealed severe fibrous adventitial thickening with round cell perivascular infiltration, extending to the medial vessels. The media showed fragmentation of its fibers and disorganization by varying-sized vessels. In areas the media was thinned to one-fourth its normal thickness by the out-pouching of the intima. Calcium deposits in the intima were also found. Microscopic sections of fixed specimens of the aorta through the coronary ostia revealed marked distortion of all the coats with diffuse focal and nodular scarring of the media. The adventitia was compact, thickened, and fibrotic. Vascularization with plasma cell infiltration and perivascular round cell accumulation was present in the adventitia and media. The endothelium in certain areas was elevated by a nonstaining space occupying material probably representing edema fluid. There were many areas of active focal necrosis in the media with round cell infiltration and some polymorphonuclear leukocytosis but no eosinophils.

The pathological findings were summarized as follows: The gross and histological findings suggest a chronic active syphilitic process with marked distortion of the aorta in the region of the coronary ostia and marked narrowing of the coronary ostia. Active inflammatory lesions of indolent nature are evident with focal degeneration and devitalization in atheroma and collagen. It cannot be stated definitely whether the fresh changes noted represent an active syphilitic process or changes due to the edema of a local Herxheimer reaction. The latter, however, is certainly a possibility. The necrotic areas in the left ventricle and interventricular septum represented focal areas of myocardial degeneration as seen in myocardial infarction and were definitely fresh, probably 8 to 10 days old. These are changes commonly seen after acute prolonged myocardial ischemia.

COMMENT

The Jarisch-Herxheimer reaction consists mainly of two reactions: (1) the general response of fever and malaise, and (2) the focal response of the site involved by the syphilitic process. It is the focal exacerbation which is of concern in the use of penicillin or any antisyphilitic drug in cases of cardiovascular syphilis. In cases of early syphilis and in cases of neurosyphilis the Herxheimer reaction is frequently encountered, as many as 75% of the cases of early syphilis showing some evidence of such therapeutic shock.[5b] The response is an immediate effect of penicillin therapy and occurs after the first or second injection, or four to six hours following the advent of treatment. The occurrence of this phenomenon in cases of early syphilis or even in cases of neurosyphilis is of little consequence; fatalities do not occur, and therapy need not be discontinued. In cases of cardiovascular syphilis, however, the Herxheimer reaction assumes great importance because of the theoretic possibility of the occurrence of occlusion of coronary ostia or rupture of an aneurysm.

The question has arisen whether such fatal reactions do occur, and to the best of our knowledge no case has been reported of such an event. Although it is impossible

---

2. Diefenbach, W. C. L.: Fatal Jarisch-Herxheimer Reaction with Sudden Aneurysmal Dilatation and Complete Bronchial Occlusion Following Penicillin Therapy, New England J. Med. **241:** 95, 1949.

3. Moore, J. E.: Penicillin in Syphilis, Springfield, Ill., Charles C Thomas, Publisher, 1946.

4. Callaway, J. L.; Noojin, R. O.; Kuhn, B. H., and Riley, K. A.: Use of Penicillin in Treatment of Syphilis of Central Nervous System: Report of 100 Patients, Am. J. Syph., Gonor. & Ven. Dis. **30:** 110, 1946.

5. (*a*) Olansky, S.: Herxheimer Reactions of Relatively Small Doses of Penicillin, J. Ven. Dis. Inform. **28:** 26, 1947. (*b*) Hill, W. R.: Problems Arising in Treatment of Syphilis with Penicillin, New England J. Med. **235:** 919, 1946. (*c*) Fromer, S. A.: Reactions in Treatment of Syphilis with Penicillin, Arch. Dermat. & Syph. **55:** 385 (March) 1947. (*d*) Leifer, W., and Martin, S. P.: Effect of Penicillin on Course of Early Syphilis, J. A. M. A. **130:** 202 (Jan. 26) 1946. (*e*) Crawford, G. M.: Medical Progress: Syphilis, New England J. Med. **236:** 243, 280, 1947. (*f*) Kolodny, M. H., and Denhoff, E.: Reactions in Penicillin Therapy, J. A. M. A. **130:** 1058 (April 20) 1946.

6. Russek, H. I.; Cutler, J. C.; Fromer, S. A., and Zohman, B. L.: Treatment of Cardiovascular Syphilis with Penicillin, Ann. Int. Med. **25:** 957, 1946.

7. Tucker, H. A., and Farmer, T. W.: Penicillin in Cardiovascular Syphilis: Early Reactions to Administration, Arch. Int. Med. **80:** 322, 1947.

8. Flaum, G., and Thomas, E. W.: Penicillin Therapy of Cardiovascular Syphilis, Am. Heart J. **38:** 361, 1949.

9. Edeiken, J.; Falk, M. S., and Steiger, H. P.: Observations on Penicillin-Treated Cardiovascular Syphilis, Am. J. M. Sc. **217:** 475, 1949.

10. Edeiken, J.; Ford, W. T.; Falk, M. S., and Stokes, J. H.: Penicillin Treatment of Patients with Cardiovascular Syphilis in Congestive Failure, Circulation **1:** 1355, 1950.

to prove definitely that our case represents a true instance of therapeutic shock, the sequence of clinical events and the eventual postmortem findings lead to the inevitable conclusion that such was the case.

The patient, a relatively young woman, had had no previous symptoms of coronary insufficiency or cardiac failure. Several hours following the first injection of penicillin, and at about the time a Herxheimer reaction would be expected, she experienced symptoms suggestive of coronary occlusion with subsequent congestive failure. Electrocardiograms substantiated the clinical impression of myocardial infarction, and finally autopsy showed syphilitic aortitis with involvement of the coronary ostia, myocardial infarction, and the absence of coronary artery sclerosis. In the gross, the areas surrounding the coronary ostia were edematous suggesting recent exacerbation. The case for a Jarisch-Herxheimer reaction seemed so clear-cut that the diagnosis was suggested antemortem, and it was felt that the postmortem findings confirmed this impression.

In view of the fact that many patients with cardiovascular syphilis are to receive penicillin in the future—either as a specific therapy, coincidentally, or accidentally, as in our case—it seems important to report instances in which probable fatal reactions are encountered. Although the bulk of evidence indicates that fatal therapeutic shock is distinctly unusual with the use of penicillin in cases of cardiovascular syphilis,[11] the discriminate use of penicillin is certainly in order in treating the disease and in the treatment of any patient about whom little is known.

SUMMARY

A case is reported in which a fatal Jarisch-Herxheimer reaction occurred in a patient with syphilitic aortitis involving the coronary ostia. This patient received penicillin, presumably for an upper respiratory tract infection. It is believed that this produced a focal exacerbation around the coronary ostia resulting in a myocardial infarction. The discriminate use of penicillin is urged both in the syphilitic patient and in the patient about whom little is known.

564 S. Main St. (Dr. Fishman).

---

[11] Russek, Cutler, Fromer, and Zohman.[6] Tucker and Farmer.[7] Flaum and Thomas.[8] Edeiken, Falk, and Steiger.[9] Edeiken, Ford, Falk, and Stokes.[10]

Prognosis of Eclampsia.—With regard to remote prognosis, my experience does not agree with the statement that "once an eclamptic, always a toxaemic," unless there was preexisting hypertensive disease at the commencement of the pregnancy. In the great majority of cases those who survive recover completely and pass through succeeding pregnancies without any trouble. If the patient is left with severe hypertensive disease, little or no renal damage and no living children, there may be a place for the Smithwick type of operation. . . .

A woman who has had eclampsia should not become pregnant for at least two years, and then only if kidney function tests give results within normal limits. No definite prognosis is given for at least six months, as renal function tests performed soon after eclampsia may be misleading and at this stage suggest permanent renal damage. Further examination in from three to six months may reveal perfectly normal renal function.—W. F. Joynt, Pregnancy Toxaemia, *The Medical Journal of Australia,* Sept. 29, 1951.

ESOPHAGEAL OBSTRUCTION DUE TO METHYLCELLULOSE

REPORT OF AN UNUSUAL CASE

Morrison H. Belmont, M.D., San Francisco

In recent years the advocation of the use of methylcellulose tablets for the relief of constipation has been brought to the attention of almost every physician practicing medicine. The widespread use of methylcellulose tablets, and the relative ease with which these tablets are obtained without first consulting a physician, prompt me to report an unusual and interesting case in which the self-administration of these pills, which acted as a foreign body, produced complete obstruction of the esophagus.

REPORT OF A CASE

A. L., a 67-year-old white man, was admitted to the Mount Zion Hospital complaining of a choking sensation and inability to swallow comfortably after the ingestion of methylcellulose pills.

About noon on the day of admission to the hospital, the patient took three coated methylcellulose tablets that he purchased an hour earlier at his neighborhood drug store. He complained that the pills lodged in his throat. His wife gave him some hot water to drink and the tablets still did not "go down." A distressing choking sensation followed, and the patient went to one of our emergency hospitals to seek relief. Attempts to pass a Levin tube past the obstructing pills were unsuccessful. He was sent to another hospital, where further repeated attempts to bypass the obstruction were unsuccessful. By this time the patient was able to contact his personal physician, and he was referred for further evaluation and treatment.

A long-standing history of constipation was elicited, for which many types of medication were used for relief. In 1947 a suprapubic prostatectomy was done with no complications. An incisional hernia was repaired in 1950 with no apparent untoward effects. In 1949 the patient was struck by an automobile, and he suffered a severe concussion. Since that time he has been quite weak and dyspneic on exertion. He states it best by saying that he has generally "slowed down."

Physical examination revealed an elderly, overweight, white man, continually coughing and expectorating mouthfuls of clear saliva. There was considerable apprehension with respiratory distress. There was no cyanosis. His temperature was 36.2 C (97.1 F), his respiration 30 per minute, his pulse 68, with a blood pressure of 120/90. There was marked watering and congestion of the conjunctiva. The lungs were clear to auscultation and percussion. The heart sounds were of good quality with normal sinus rhythm. The area of cardiac dulness was indistinct. There was a Grade 2 systolic murmur over the precordium, loudest at the second left interspace on the right and the left of the sternum. A pitting edema (2+) of the pretibial region and the ankles was noticed. Good pulsations of the radial and dorsalis pedis arteries were present. The patient was taken to the x-ray department, where a barium-filled capsule was swallowed, and the roentgenograms showed the pellet of barium to be held in the esophagus at a level corresponding to the fourth thoracic vertebra. He was taken to the operating room for esophagoscopy.

With the patient under intravenous thiopental (pentothal®) sodium and curare anesthesia, a 10 by 45 cm. Jackson esophagoscope was introduced into the esophagus. The hypopharynx and the opening of the esophagus were reddened and edematous. The esophagoscope was advanced down to a level of 24 cm. from the upper midgingival margin, and the barium previously given was visualized. This was aspirated, and a pearly gray, firm, gelatinous mass was readily seen completely obstructing the esophagus. With gentle but firm pressure the instrument could not be advanced beyond this area. An attempt to aspirate or flush out this material was unsuccessful. The gelatinous material was removed in small fragments with a long grasping forceps until a free lumen was established. A Levin tube was passed into the stomach and brought out through the nostril after the withdrawal of the esophagoscope. The patient left the operating room in good condition.

Following endoscopic removal of this foreign body, the patient was relieved of all his symptoms. The Levin tube was removed on the second postoperative day, and a soft diet was well tolerated by the patient. He was discharged from the hospital the following day. There was no dysphagia or respiratory distress. An esophagram was taken a week later, and no obstruction or delay of the passage of the barium was noted.

SUMMARY

An unusual foreign body that caused a complete obstruction of the esophagus in its upper third is reported in an elderly patient. This consisted of a gelatinous mass formed from three coated methylcellulose tablets that became hydrated in the esophagus. The distressing symptoms of choking and smothering were completely alleviated following endoscopic removal of the resultant gelatinous mass eight hours after the pills were swallowed.

909 Hyde St.

COUNCIL ON FOODS AND NUTRITION

The following products have been accepted as conforming to the rules of the Council on Foods and Nutrition.

JAMES R. WILSON, M.D., *Secretary.*

The Borden Company, New York.

KLIM POWDERED WHOLE MILK WITH VITAMIN D ADDED, a powdered whole milk fortified with vitamin D, irradiated 7-dehydrocholesterol, in amounts sufficient to produce a minimum of 400 U. S. P. units of vitamin D per reliquefied quart (32 fluid ounces) of whole milk powder.

Analysis (submitted by manufacturer).—Butterfat 28.00%, protein 26.5%, lactose 37.7%, minerals 5.8%, moisture 2%.

Calories.—5.1 per gram; 145 per ounce.

Clapp's Baby Food Division, American Home Foods, Inc., Rochester, New York.

CLAPP'S JUNIOR SQUASH.—Ingredients: squash, salt, and water sufficient for preparation.

Analysis (submitted by manufacturer).—Total solids 8.73%, moisture 91.27%, ash 0.79%, fat 0.13%, protein (N × 6.25) 0.55%, crude fiber 0.85%, carbohydrate (by difference) 6.41%.

Vitamins and Minerals	Mg. Per 100 Gm.
Carotene	1.45
Thiamine	0.010
Riboflavin	0.078
Ascorbic acid	3.68
Nicotinic acid	0.450
Calcium	12.39
Phosphorus	30.28
Iron	0.64
Copper	0.59

Calories.—0.29 per gram; 8.3 per ounce.

Use.—For use in the feeding of older infants and young children.

Reid Murdoch & Company, Division of Consolidated Grocers Corporation, Chicago.

MONARCH BRAND DIETETIC PACK STRAINED GREEN BEANS consists of the vegetable itself, packed in water without any added salt.

Analysis (submitted by manufacturer).—Available carbohydrates (total carbohydrate minus crude fiber) 4.88%, crude fiber 0.78%, fat (ether extract) 0.04%, protein (N × 6.25) 1.39%, ash (minerals) 0.49%, sodium 1.6 mg./100 gm.

Calories.—0.25 per gram; 7.9 per ounce.

Use.—For use in low sodium and other therapeutic diets.

Smith-Dorsey, Lincoln, Nebraska, Division of The Wander Company, Chicago.

H.P.S. SIXTY. Ingredients: milk protein concentrate, sodium proteinate from soybean meal, whole egg powder, powdered sugar, ethyl vanillin.

Analysis (submitted by manufacturer).—Total solids 95%, moisture 5%, ash 6.3%, fat 1.5%, protein (N × 6.25) 60%, carbohydrate 27%.

Calories.—3.6 per gram; 102.1 per ounce.

Use.—A whole protein supplement for oral use when extra protein or a concentrated source of protein is required in the diet.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional article has been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

NPH Insulin.—NPH Iletin (Lilly).—"NPH insulin is a preparation of crystals containing insulin, protamine, and zinc, suspended in a buffered medium. Zinc-insulin crystals are used in such quantity that each cubic centimeter of the preparation, when the precipitate therein is brought into uniform suspension, contains either 40 or 80 U.S.P. Units of insulin. Protamine is used in such quantity that the preparation contains not less than 0.3 milligram nor more than 0.6 milligram for each 100 U.S.P. Units of insulin; but the quantity is not less than that of the isophane ratio . . . and does not exceed that of the isophane ratio by more than 10%. The preparation contains, for each 100 U.S.P. Units of insulin, not less than 0.016 milligram and not more than 0.04 milligram zinc and not more than 0.85 milligram nitrogen. Disodium phosphate (calculated as Na_2HPO_4) is used in a quantity not less than 0.15% and not more than 0.25% (w/v). The pH of the finished preparation is not less than 7.1 and not more than 7.4. The preparation also contains either (a) not less than 1.4 and not more than 1.8% (w/v) glycerin and not less than 0.15 and not more than 0.17% (w/v) meta-cresol and not less than 0.06 and not more than 0.07% (w/v) phenol, or (b) not less than 0.42 and not more than 0.45% (w/v) sodium chloride and not less than 0.7 and not more than 0.9% (w/v) glycerin and not less than 0.18 and not more than 0.22% (w/v) meta-cresol. The protamine used is prepared from the sperm of mature testes of fish belonging to the genera *Oncorhynchus* Suckley, *Salmo* Linne, or *Trutta* Jordan and Evermann (Fam. *Salmonidae*)." Regulations promulgated Sept. 28, 1950 by the Administrator, Federal Security Agency: Certification of Batches of Drugs Composed Wholly or Partly of Insulin [15 Fed. Reg. 7363 (Nov. 2, 1950)].

NPH Insulin conforms to the regulations of the Food and Drug Administration concerning insulin-containing drugs.

NPH insulin injection has about one-half to one-fifth the protamine and about one-sixth to one-twelfth the zinc content of protamine zinc insulin injection.

Actions and Uses.—Essentially, NPH Insulin is a modification of protamine zinc insulin, but it differs in that it contains less protamine, less zinc, and is crystalline rather than amorphous in character. The pharmacologic action of NPH Insulin is similar to that of the other insulins. Its blood sugar lowering action is in an intermediate position between globin insulin and protamine zinc insulin. The onset of action for NPH Insulin usually begins within 2 hours after subcutaneous injection, whereas 4 to 6 hours are required for protamine zinc insulin. Its peak effect occurs 10 to 20 hours after administration, and its duration of action is 28 to 30 hours.

NPH Insulin may be mixed with regular insulin. Loss of quick action of regular insulin is less with NPH Insulin than with similar mixtures with protamine zinc insulin, because NPH Insulin contains less available protamine. Used in conjunction with regulation of diet and exercise, this form of insulin is of value in control of severe and labile diabetes. It is not recommended for use alone in patients who require quick acting insulin.

Dosage.—See Protamine Zinc Insulin.

Warning.—If administered after breakfast, danger of nocturnal hypoglycemia exists.

NPH Iletin: 10 cc. vials. 40 units or 80 units in each [illegible] centimeter. Preserved with 0.15% *m*-[illegible] and 0.06% [illegible]. Eli Lilly & Compa ianapolis, Ind.

NPH Insulin: vials. 40 uni units in c centimeter. Pr th 0.15% and 0.06 . E. R. Squibb York.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL REVISED

The first standards officially established by the American Medical Association for an approved medical school were prepared more than 40 years ago by the Council on Medical Education and Hospitals with the approval of the House of Delegates. Periodically, these standards, known as the "Essentials of an Acceptable Medical School," have been revised by the Council to meet changing ideals, concepts, and methods in medical education.

In December, 1951, the Council completed work initiated a year earlier on the eighth major revision of these essentials. The revision was approved by the House of Delegates at the Clinical Session in Los Angeles. Copies of the revised essentials are at present being distributed to the medical schools and others interested in medical education. In the course of preparing this revision, the Council received valuable suggestions from the Association of American Medical Colleges.

The revised essentials do not depart from fundamental principles that have been long accepted as the basis or successful undergraduate medical education. The anges that have been made, however, should be valuable in clarifying current concepts of medical education and in stimulating further advances. An important example of such a change is to be found in the following restatement of the section dealing with the design of the medical curriculum: "The entire course should be designed as an integrated program of instruction with the objective of the education of the student in the science, art and practice of medicine, including the understanding of health and its cultivation and the understanding of disease and its prevention and treatment. The students should also be made fully aware of the social aspects of medicine and of the role of medicine in the community."

The essentials then state: "No rigid curriculum for accomplishing these objectives can be prescribed. On the contrary, continuous study by the faculty with the introduction of modifications and new methods and materials that take proper cognizance of advances in medical science and changing conditions of medical practice is essential in the conduct of an acceptable medical school."

This statement reflects no basic change in the attitude of the Council but rather makes explicit a philosophy that has been held for many years. The medical curriculum cannot become fixed or static. The above statement makes it clear that a school that does not subject its curriculum to continuous study and that does not continually seek to improve its curriculum must be regarded as deficient.

A major change in the essentials is found in the requirements for admission to an approved medical school. Since 1918, the minimum requirement for admission to approved medical schools has been two years of college training. Since 1938 the Council has recommended three or more years. This recommendation has now been made a requirement. The new essentials states that, beginning Jan. 1, 1953, "The minimum requirement for admission to approved medical schools is three years of college training for the average student. For most students four years is recommended in order to provide an opportunity to gain a broad educational experience. Rarely a school will be justified in admitting a superior student under exceptional conditions after two years of college work." The latest available statistics indicate that, of the students who entered medical school in 1949 and 1950, 99 per cent had had three or more years of college training.

The section of the essentials dealing with the faculty, which previously discussed principally the faculty of the preclinical departments, has been expanded and clarified by the addition of the following paragraph: "In the major clinical areas of medicine, surgery, pediatrics, obstetrics and psychiatry, there should be a nucleus of full time instructors who have as their major responsibility the planning and supervision of the department's educational program and the conduct of research." This paragraph gives further emphasis to an important trend that the Council has encouraged for many years.

Many other changes have been made throughout the essentials to clarify meaning, to introduce desired flexibility, or to recognize modern techniques and methods of teaching and administration. Some may be critical that the essentials are neither sufficiently detailed nor sufficiently revolutionary. When the Council prepared its first essentials, medical education in the United States taken as a whole was in a state approaching chaos owing to the lack of recognized standards as to what constituted a satisfactory medical school. After studying the patterns of education set by leading medical schools abroad and by the few outstanding pioneer medical schools in this country, the Council set forth in its first essentials relatively specific requirements for schools seeking its approval. As the medical schools became stable institutions under university or other responsible sponsorship, the Council progressively modified its essentials in the direction of stating fundamental principles and objectives, leaving to the individual institutions the choice of methods each should follow to implement these principles and achieve these objectives. Much specific detail has been eliminated therefore from the essentials as they have been revised over the years. This same development of the medical schools as mature, stable institutions has made unnecessary and undesirable any attempt to introduce requirements that would be revolutionary in medical education. Medical education has long since achieved a level of stability from which more progress can be expected by evolution than by revolution. The function of the Council, as is well reflected in the present essentials, is not to force innovations in medical education on the medical schools as requirements but to foster and encourage experimentation and to weigh experiments and innovations carefully, including them in the essentials only when their merit has been proved. In this manner the Council gives recognition to important advances in medical education and encourages their acceptance by all schools. The Council is to be congratulated on the skill with which it has succinctly stated the fundamentals of a modern acceptable medical school in this latest revision of its essentials.

MEDICAL EDUCATION FOUNDATION *ENTERS SECOND YEAR*

The American Medical Education Foundation ended its first year Dec. 31. During this initial period, more than 1,800 individual physicians contributed to the total of $745,917.84 received by the Foundation. In addition, 33 organizations and 33 lay persons made contributions. Although short of the anticipated goal, these results may be considered reasonably satisfactory for a new undertaking of the magnitude of the Foundation.

A source of real encouragement is the steadily increasing interest shown in the Foundation during the last two months of 1951, as reflected by the number of individual contributions. The number of contributions received so far in 1952 indicates that this interest, which has been largely stimulated by the increasingly active efforts of state and county societies, will continue to grow.

The Foundation is now perfecting plans for its 1952 program. As it did in 1951, the Board of Trustees of the American Medical Association has made a gift of one half million dollars to serve as a nucleus for the year's fund. This gift brings to a total of one million dollars the American Medical Association's contributions to the Foundation since its inception a year ago. The Association will also continue to underwrite all the expenses of the Foundation, so that every dollar of every contribution received can be passed on to the medical schools.

A new feature of this year's campaign will be a meeting later this month in Chicago of representatives of all state societies. This conference is designed to facilitate a greatly increased participation by state and county societies in the 1952 campaign. The experience of the first year makes it clear that the success of the Foundation, as with all important efforts of the medical profession, will be measured in terms of action at the state and county level.

At the suggestion of many leaders in the profession and in the medical schools, the Directors of the Foundation at their December meeting voted an important change in policy. Beginning with gifts received after Jan. 1, 1952, all contributions designated by individual physicians for a specific medical school will be added to the school's grants from the unearmarked funds raised by the Foundation and the National Fund for Medical Education. Last year each school was provided with the names and amount contributed by donors designating a school, but such contributions were included with unearmarked funds in calculating the grants according to the formulas mutually agreed upon by the Foundation and the National Fund.

This new policy means that alumni or friends of a medical school can make a contribution to a medical school through the Foundation and the school will receive the full amount of the contribution plus its full share of unearmarked funds. The advantage of making gifts in this manner is that, by increasing the total raised by the Foundation and the National Fund, gifts from other sources will be stimulated, and certain contributions that are contingent on specific totals being achieved can be collected.

To eliminate possible competition with the fund raising campaigns of the individual schools, the Directors also voted that, effective Jan. 1, 1952, the Foundation each year will give appropriate recognition in its annual report to those physicians whom the medical schools report to the Foundation as having supported medical education by making a gift directly to a medical school.

There is much evidence that the activities of the Foundation are developing a greater awareness and interest in the needs of the medical schools on the part of physicians generally. Many physicians are indicating by contribution their recognition of the debt they owe their medical schools, while many others see in the Foundation an opportunity for the medical profession to again demonstrate its willingness to aid in the advancement of high standards of medical education.

At its recent annual meeting the Association of American Medical Colleges passed the following resolution:

"Resolved, That the deans of the medical schools in assembly for their sixty-second annual meeting unanimously expressed their sincere appreciation and their enthusiastic thanks to the Directors and officers of the American Medical Education Foundation for their substantial support of medical education and for helping to focus national attention on the serious financial predicament of the medical schools."

The Student American Medical Association at its annual meeting in December, 1951, passed the following resolution:

"We extend our sincere appreciation to the American Medical Education Foundation for the most beneficial program they are undertaking."

Official commendation has also been received from the American Veterinary Association.

The first distribution of funds to the medical schools was made in July, 1951. The balance of the funds raised ing 1951 is now [illegible] sent to the medical schools through the National Fund for Medical Education. Although the campaign for contributions to the 1952 fund will not be formally initiated until the spring, a number of physicians who contributed in 1951 have already sent in their 1952 contributions. The Foundation is thus off to a good start in its second year. All signs point to a successful effort, which will constitute a real challenge to industry, business, agriculture, and other important groups concerned with medical education to contribute generously to the solution of this important problem.

LIVER AND PLASMA PROTEIN SYNTHESIS

Over a period of years evidence that the liver is the site of formation of plasma albumin, fibrinogen, and, possibly, globulin fractions has accumulated from both experimental procedures and observations in pathological states. Recently, Miller and associates [1] reinvestigated this question using newly developed techniques. They perfused isolated, intact rat livers with rat blood containing isotopically labelled lysine together with the amino acids essential for optimum growth in the rat and subsequently determined the rate of incorporation of radioactive amino acid in the liver and in plasma proteins. In contrast to experimental devices employing tissue slices or homogenates, the isolated liver still remains active metabolically as long as four hours after the initiation of the perfusion, and studies could be continued for about six hours. The perfused liver was able to differentiate between the L- or natural isomer and the D- or unnatural isomer of C^{14}-labelled lysine, the natural form being used for the formation of protein. Also, it was noted that the lag period, which occurred after the labelled amino acid was added to the perfusion medium and before it was incorporated into the plasma proteins, could be shortened by adding to the perfusate nonessential as well as essential amino acids. This would indicate at for the fabrication of plasma protein at rapid rates, onessential as well as essential amino acids are required. This confirms postulates of previous workers based on data obtained in work with intact animals.

The information obtained by Miller and his associates indicates that the liver plays a dominant role in the synthesis of plasma proteins, including practically all of the albumin and fibrinogen and probably more than 80 per cent of the globulin fractions. The question of the synthesis of the individual globulins could not be answered by these investigators, inasmuch as precise fractionation of the globulins was not attempted. Their studies on isolated, nonhepatic tissues confirmed earlier reports that such tissues can remove amino acids from the perfusion fluid and convert them into tissue proteins and into plasma globulin. These studies offer an explanation for the hypoalbuminemia and inverted albumin-globulin ratio in various liver diseases. Thus the amino acids that are absorbed into the portal system may escape utilization by the damaged liver cells and are thus presented *de novo* to the extrahepatic tissues. Albumin cannot be synthesized by these tissues, but they are capable of forming some of the serum globulin. Hence it is conceivable that a large portion of the ingested amino acids may be metabolized by the extrahepatic tissues.

One of the important contributions of the Rochester group is a method of studying the metabolism of isolated organs under conditions that more closely resemble the physiological state, and by which it is possible to have better control of the various factors that influence the activity of the organ than is possible in the intact animal. These techniques should be a valuable addition to the methods of study of disease processes.

HAZARDS OF ANTIBIOTIC FEED SUPPLEMENTS

The markedly increased rates of growth that follow the addition of small amounts of the broad spectrum antibiotics to animal rations has led to widespread use of antibiotic supplements by livestock feeders. A report by Starr and Reynolds [1] draws attention to potential health hazards that may eventually offset the immediate economic gains afforded by this practice. These investigators found that the addition of small amounts of streptomycin to the rations of turkey poults caused the rapid appearance of highly streptomycin resistant coliform bacteria in feces cultures. The presence of resistant pathogens in fowls is of no great consequence in the poultry industry, since the use of antibiotics in diseases of birds is generally uneconomical. However, the spread of drug-fast strains of Salmonella to larger farm animals could, in the authors' opinion, be serious, as the value of meat animals justifies the use of chemotherapeutic agents in livestock diseases. Of greater significance is the fact that Salmonella originating from poultry have been shown unequivocally to be virulent to man. Thus the risks of incurring a large reservoir of drug-fast enteric pathogens in the poultry population cannot be dismissed lightly. Yet another possible danger of prolonged antibiotic feeding lies in the relative increase of yeast or yeast-like organisms in the birds' intestinal flora. As Starr and Reynolds point out, some of these organisms may be pathogenic to man and may prove troublesome owing to the inefficiency of known chemotherapeutic agents in fungus infections.

An earlier report [2] stressed that much remained to be determined in regard to the long-continued use of antibiotic supplements, such as the effect on metabolic processes other than growth and the possibility of residual toxicity in the meat produced. In concluding their report, Starr and Reynolds express the hope that further research will elucidate the fundamental mechanism underlying the growth-promoting effect of antibiotics and permit agriculturists to secure more rapid animal growth without inflicting potential hazards on the public health.

---

[1] Miller, L. L.; Bly, C. G.; Watson, M. L., and Bale, W. F.: The Dominant Role of the Liver Plasma Protein Synthesis: A Direct Study of the Isolated Perfused Rat Liver with the Aid of Lysine-ε-C^{14}, J. Exper. Med. **94**: 431-453 (Nov.) 1951.

[1] Starr, M. P., and Reynolds, D. M.: Streptomycin Resistance of Coliform Bacteria from Turkeys Fed Streptomycin, Am. J. Pub. Health **41**: 1375 (Nov.) 1951.

[2] Growth-Promoting Effects of Antibiotics in Animals, Nutrition Rev. **8**: 298, 1950.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

A little more than seven years ago a motherly, gray-haired woman named Mrs. Charles W. Sewell called at the Lafayette, Ind., home of Dr. F. S. Crockett. Mrs. Sewell was then the Administrative Director of the Associated Women of the American Farm Bureau Federation. She was concerned about a postwar shortage of doctors in certain rural areas in this country. She therefore called upon her long-time friend Dr. "Davy" Crockett to see if he could suggest a solution. I believe it is safe to say that the American Medical Association's rural health program was born in that Indiana home that afternoon. Dr. Crockett was convinced of the need to "do something" to improve rural medicine. He presented his ideas to the next meeting of the Board of Trustees of the A. M. A. and became chairman of the new committee the Board established to work on the problem.

A few months ago the seven years of increasingly effective work done by the Committee on Rural Health was recognized by the elevation of the Committee to the status of a Council of the American Medical Association. This reflects the continuing interest of American medicine in the good health of the people of our rural areas.

The philosophy of the members of the Council on Rural Health is refreshing in this age of "planners." From the first, their goal has been to encourage farm persons to help themselves. They always have envisioned the role of their Council as that of a coordinator, who interests communities in their own health problems, encourages the persons in the community to work together to solve these problems, and then passes along the experience and the good ideas thus gained to others in need of help.

The primary tool used in this process is the annual national Conference on Rural Health, sponsored by the American Medical Association in cooperation with farm groups. This year's Conference—the seventh—will be held in Denver on Feb. 28 and 29 and March 1. The development of these conferences over the years reflects the progress that has been made in rural health. Early meetings, held in Chicago, were devoted chiefly to getting acquainted, to defining the health and medical problems of rural persons, and to discussing what could be done about them. Then, as each succeeding year passed, the programs became more and more filled with case history reports from communities that had successfully met their health needs. This year's program, built about the theme "Help Yourself to Health," will devote an entire afternoon to a panel called "We Have Helped Ourselves to Health—and How."

Topics that have made regular appearances on most of the Conference programs include: how a rural community can attract and hold a physician, how a community can build medical facilities or a hospital, how it can acquire modern diagnostic and therapeutic equipment, and how a community can educate its residents to use properly the physician and medical facilities that it acquires.

The A. M. A.'s Council on Rural Health has no set answers to these problems, because solutions vary with local situations. One idea, however, has been pushed strongly by the Council. That is the establishment of community health councils, through which all segments of a community can work together to improve health conditions. Through this medium, too, community leaders come to realize that the responsibility for good health rests, not on the physicians alone but also on the individual and the community. The Council stresses that physicians must take the lead in health planning but is convinced that programs will be more successful if they have community-wide understanding and support.

The Council has followed this same philosophy on the national level. When it was first decided to sponsor a national Conference on Rural Health, the Council members felt that they should contact leaders of farm organizations to determine what kind of program they wanted. Accordingly, an advisory committee was set up. On it were representatives of the Grange, the American Farm Bureau Federation, the Milk Producers Federation, and the Extension Services of the Land Grant Colleges. Its recommendations proved so valuable that the advisory committee became a permanent institution. It has continued to assist the A. M. A., not only with its succeeding conferences but with all aspects of its rural health program. Today the Committee is composed of 11 representatives from farm groups and the rural press.

Last year the Council on Rural Health took another step forward when it hired Mr. Aubrey D. Gates, associate director of cooperative extension work for the University of Arkansas, to make a nine month trip around the United States for the purpose of studying community health programs and advising medical societies and other interested groups concerning ways and means of improving local health. The only difficulty that soon became apparent in Mr. Gates' work was that nine months was totally insufficient for accomplishment of the job he had been asked to do. I am gratified to report, therefore, that, after returning to the University of Arkansas to complete previous commitments, Mr. Gates is joining the A. M. A. on a full-time basis this month. He will be available to rural communities anywhere in the nation that are in need of skilled and friendly counseling on how to solve their own health problems.

Those of you who practice in rural areas will also find the published proceedings of the various rural health conferences and the magazine reprints dealing with rural health subjects, which the Council has available, of great interest and assistance. As I have said before, the American Medical Association is your A. M. A. I encourage you to take advantage of the many facilities it has for serving you.

In closing I wish again to salute the work of the Council on Rural Health and its counterpart rural health committees in the state medical associations. These groups, together with the major farm organizations, have made significant progress in improving the rural medical picture during the past seven years. With their philosophy of self-help and joint effort, I foresee a steadily brightening health outlook for rural Americans in the future.

John W. Cline, M.D., San Francisco.

ORGANIZATION SECTION

The following six papers were among those presented at the Fourth Annual Public Relations Conference, held at Los Angeles, Calif., Dec. 2-3, 1951.

TIME IS MONEY FOR YOUR PATIENTS, TOO

Stanley R. Truman, M.D., Oakland, Calif.

Good public relations must be put into the reception room. This is an area where something can be done, and, with a little effort, a great deal can be done. Doctors make patients wait and patients resent being made to wait. Smart doctors will find means of reducing the waiting to a minimum and of relieving the resentment of patients for unavoidable delays.

Numerous public relations surveys made throughout the country show the same feeling by patients about doctors making them wait. Let's see what they say. "I spend half my time waiting to see the doctor." "I keep my appointments with the doctor, but he doesn't seem to have any with me." "It is easier to see the president of any bank and with less waiting than it is to see a doctor." "When I arrive for my appointment I find half a dozen others there at the same time." "My time is just as important as the doctor's." "I wait for hours, even though a definite appointment has been made and kept by me." In Maine, California, Texas, Virginia, Ohio, wherever you go, the story is the same, "My doctor makes me wait, my doctor makes me wait, my doctor makes me wait." From the universality of the complaint it is apparent that patients are disturbed, annoyed, and resentful.

Let's look in on a doctor's office. Some months ago I sent a patient for consultation. Let me tell you the story as the patient told it to me. "I took the morning off and had an appointment with the doctor at 10:30. I will admit I arrived early, about 10 minutes. The reception room was open, the lights were on, there was nobody there. There were some comfortable chairs. There was some reading matter of not too ancient vintage on the table; however, I had brought my own pocket magazine to read. There was no gong or sound indicating my arrival when I opened the reception room door. I looked at the inner door to see if there was a buzzer that I might press, or some other means of indi- ing my presence. There was none. I sat down and read for minutes, keeping one ear constantly alerted for any sounds e doctor's sanctum sanctorum. All was quiet and peaceful. t up and inspected the outside door to see if there was some ntraption to give a signal when the door was opened and shut. No mechanical device. I closed the door and went over and gently knocked on the inner door. I sat for 10 minutes more. Still there was no indication of anyone's awareness of my presence. I put down my magazine and then approached the inner door, and, with some vigorous and solid knocking, I announced my presence. Still nothing but peace and quiet. I went back to my reading. After a while one of the sweetest young things you ever saw opened the door with book in hand and nodded saying, "Mr. J. D.?" I said, "Yes." She said, "The doctor hasn't come in yet. Just make yourself comfortable." I went back to my reading. Fifteen or 20 minutes later the sweet young thing came back and said, "You can come in now." And I did.

What were the reactions to that doctor? A good old American expression summed it up very fluently, "Who does that guy think he is anyway?" Now notice that it was not the factor of the waiting, because he had taken the morning off anyway, but it was the attitude of the nurse and doctor that made the patient gradually build up resentment into actual hostility.

When a patient has made the decision to go to the doctor he has made a decision of great importance to him. He has decided to spend time, which may lose him wages or earnings, he has decided to spend money, which to the average worke often amounts to the pay earned in a half or even a full day and, finally, he has made the decision that he may have something serious enough to need the attention of a doctor. So, h is in a state of anixety. When the secretary or the doctor b their behavior or attitude, by their lack of attention to the patient's time, comfort, or feelings make the patient feel that hi call is of little importance to them, that he and his troubles ar insignificant and unimportant, they arouse in the patient feeling of resentment and hostility toward the doctor and toward th medical profession.

Unfortunately, unlimited examples from the experiences o patients in doctors' offices and of the attitude of physician toward patients could be given; however, the illustration is sufficient to make the following points: 1. Patients wait. 2. Patient wait more than is necessary. 3. Patients resent waiting. 4. Th resentment aroused is created less by the act of waiting than b the attitude and behavior of the doctor and his secretary towar the patient. 5. Finally, it is rarely the doctor himself who com in contact with the patient during this waiting period, therefor any major improvement in this area of the patient-doctor relationship must take into consideration the function and behavi of the office personnel.

Doctors and their secretaries must be made to realize th the secretary is the ambassador of the doctor, or even mo than that. In the mind of the patient the words, attitudes, action and personality of the secretary are interpreted as the dire projection of the words, attitudes, action, and personality of th doctor. Don't ever get the idea that the patient is going to excu you for having an "old goat" or a "sour puss" as an assistan No sir. It's a total feeling that the patient takes away fro your office. The amount of tact, charm, and goodwill that yo will have to generate in order to overcome the resentment bui up by a poor secretary-patient contact will be enormous. is not worth it. *Start out with good secretary-patient relationshi when the patient first contacts your office. Some doctors an some secretaries have an intuitive ability to react sympathetically to the problems and feelings of patients. They automatically know how to handle patients with tact and skill. The doctors invariably are successful in the practice of medicin Many doctors have this gift, but how about those who do no Fortunately for the patient, fortunately for the doctor, an fortunately for the public relations of our profession, it h been demonstrated that the techniques of understanding th patient's feelings and needs, and of assuming the proper attitude can be taught both to the doctor and to the doctor secretary.*

It would be very profitable if we could delve more deepl into the feelings, emotions, and subconscious attitudes of resentment and hostility developed in patients as a result of po waiting room and reception techniques. Studies on the subje have been started in this area, and we shall follow their resul with interest and profit. While this work is going on and unt definitive answers and techniques are available, we must develo a simple formula that can be utilized to assist doctors and thei personnel in handling this aspect of the doctor-patient relationship with more skill, smoothness, facility, and success.

To be practical I have put down some rules, which, if followed by the doctor and his secretary, will create a more harmonious attitude between the doctor and the patient, and a mor satisfied and sympathetic feeling on the part of the patient.

1. The doctor must attend to the physical features of the reception room, but more important, to the techniques of scheduling and handling patients by his employed personnel.

2. The physical facilities should be appropriate to the typ of practice and to the clientele and should express the dignit and serious nature of the practice of medicine.

Past President, American Academy of General Practice.

3. Whether you divert your patients with tropical fish, soft music, the latest literature, or coffee is less important than that you show real concern for any discomfort or inconvenience caused the patient by forcing him to wait or waste time waiting for you.

4. You must form a set of rules for your secretary to follow and see that she follows them. If she is not interested in patients as persons, if she is not interested in running a smooth and pleasant office, if she is not interested in creating a pleased appreciative attitude in your patients, fire her. Fire her now and get someone who will cooperate. Neither you as an individual entrepreneur nor we as a profession can afford to tolerate an indifferent attitude in ourselves or our employees. Let your secretary know what an important job she has in creating public and patient goodwill and get her cooperation in developing techniques of handling patients. With intelligent cooperation and understanding, with the realization that it takes brains, tact, sympathy, and understanding to function as a successful office secretary these girls can develop remarkable interest and skill in this area and will derive greater pleasure and satisfaction from their work.

Following is a list of suggestions for doctors' nurses and secretaries in handling waiting patients: Keep the reception room comfortable, neat, and clean. This should be obvious, but apparently it is not, judging from the many messy, close, and uninviting reception rooms I have seen.

Schedule appointments. There are a few doctors who still keep hours from 2 to 5 p. m., letting patients drop in promiscuously. Fortunately, few doctors insist on retaining this obsolete technique. Your secretary not only should schedule appointments but should schedule them realistically. She should study the actual amount of time required for various patients and various procedures and then schedule the patients when it is anticipated that you will be able to see them.

Usually, the patient telephones for the first appointment. Great attention should be paid to your secretary's telephone technique. The phone should be answered promptly. The secretary should act as a person; she should give her name, i. e., Miss Stetson or Miss Barbee, not be just a voice in the earphone of the receiver. She should get into the spirit of making the patient feel he is important. She should work out the most convenient time for the patient. She should treat the patient as a person, ask for his name and call him by it, and, at the close of the conversation, thank him and call him by name again.

When a patient arrives at the doctor's office his arrival should be recognized as soon as possible. Recognize the patient by name in a pleasant, friendly manner. The secretary should have a friendly smile. If she can't smile, have her practice at home before the mirror. Her ability as a female actress should include the ability to provide a friendly smile at will. Indicate to the patient when the doctor will be available. How long will it be. If it is over a few moments, give a full, reasonable, and adequate explanation. If there is to be any considerable delay the secretary should express her concern and regret and also express how sorry the doctor is that he is having to make the patient wait.

Make the patient feel that his presence in this office is an important matter. If a significant emergency has occurred that may make the delay an excessively long one, give the patient the opportunity of waiting or returning at a more convenient time. It is wise to let the patient know that the doctor is on a humanitarian mission. If the patient has to sacrifice some of his time in the same cause he feels a sense of belonging, of cooperating, rather than one of resentment. We recently had a patient-relationship failure in our office on this very account. A busy executive made an appointment for 10:30 in the morning. He and I were both on time. He was ushered into an examining room and asked to take off his shirt. At this very moment a frail, pale, weak, and frightened young woman who was hemorrhaging severely was unceremoniously carried into the office by two extremely excited men. My secretary immediately put her into another treatment room, and I promptly focused my attention on stopping the hemorrhage and caring for the woman. It took approximately 35 minutes to stop the hemorrhage, make arrangements to have the patient sent to the hospital, and arrange for a transfusion. In the meantime, our busy executive was chilling his back and chest in the examining room. During the proceedings my secretary poked her head into his room and announced, "The doctor is busy with an emergency and will see you in a minute." Some time later he poked his head out the door and announced to my secretary in very irate terms what he thought of secretaries and doctors that made busy men wait, that he was going to miss an important appointment, and that if this was going on very much longer he was going to get out of there. She did coax him to wait, but when I saw him he was extremely upset. He "told me off" in strong terms. His words and behavior stimulated a marked anger reaction in me, and I am sure that I was belligerent in my answer. However, I told him straightforwardly what had happened and that if I hadn't taken the time to stop the hemorrhage, the woman probably would have bled to death, that she was on her way to the hospital to get a transfusion, and that if he had an appointment that was important he could keep it and I would meet him at noon or tomorrow morning at 8 and we could finish the examination. He said, "No, go ahead." So we went on with the examination. A few minutes later I said, "You know, it upsets me greatly to have to make a patient wait, but I certainly have no control over emergencies of this nature." He softened up a little, and so did I. Later, he told me the appointment really wasn't important, he was just going to walk around with the pro at the golf club to see if the greens were going to be dry enough to open the course for the week-end. I apologized again for making him wait. That afternoon a box of chocolates and a nice note came by special messenger to my secretary apologizing to her for his angry words and impatience. By this means he demonstrated that a feeling of guilt and apology had been substituted for the feeling of resentment and hostility toward myself and my secretary. How much better it would have been if my secretary had taken the time in the beginning to give him a full explanation of the cause for the delay instead of waiting until his resentment and hostility had been built up.

We have made the discovery that patients like to have something they can take away from the doctor's office. Many pamphlets for this purpose are being made available by the A. M. A., the Cancer Society, the American Tuberculosis Association, and other such organizations and health agencies. Let me warn you about such reading matter for distribution. You must inspect and read them carefully before you make them available for your patients. Some of the pamphlets are highly respectable, attractive, educational, and informative, but a lot of them are not. Some of them are the very kind of thing we don't want patients to read.

Numerous other aspects of the duties and functions of the secretary and nurse should be carefully studied and taught. Doctors must be reminded that each new secretary and nurse must be taught the whole thing over again. Unfortunately, some of us have taught our first few secretaries good practices, but after a while we make the assumption that these techniques come intuitively. They often do not. This coaching and teaching can become tiresome and discouraging, particularly when one is busy or if there is much of a turnover in personnel. Have you wished, as I have, for a little primer for nurses and secretaries on the matter of handling the patient in the doctor's office? Some of the texts on office nursing have chapters on this subject. They help but are not sufficient and do not have the latest and best public relations approach to this problem. The Ohio State Medical Association has published a six-page pamphlet, "A Date with the Doctor," which is a splendid beginning. Starting with the November issue, *Medical Economics* is repeating a series of articles published several years ago, "Letters to a Doctor's Secretary." I recall this series as being quite worth while. Until an adequate text is available, I suggest that the doctor supply his secretary with a copy of Dale Carnegie's book "How to Win Friends and Influence People." About 10 years ago I read this book and found it had numerous practical and worth-while suggestions for handling persons. Recently I was impressed when one of the popular magazines asked a number of successful business men what books had contributed most to their success. I was surprised to read that "How to Win Friends and Influence People," was one of those listed most frequently.

I have found it valuable to have a conference once a month with the entire office staff. The most pleasant way of accomplishing this is to have a luncheon together. During lunch we discuss problems of practice. The secretary and the nurses bring up illness and as persons are variable, but the answer to the last one should be, and ordinarily is, reasonably arrived at.

From the secretary of the county medical society, nearly anywhere in the United States, a young doctor can get the fee schedule of that particular county. From talking with his fellow practitioners, he can quickly learn what, if any, variations are made in that schedule. It will always be a good rule for any doctor not to undercut the average charge in his community and not to go too far above it. Ninety per cent of the patients want to pay reasonable amounts to their doctors for their services. I do not know the recipe for success, but I can tell you the recipe for failure. It is "Try to please everybody." Some patients cannot pay, and it is better for both the patient and the doctor that the fees be cancelled than ever "marked down." The doctor who "marks down prices" quickly gets "marked down" in the patient's eyes, whereas the doctor who cancels charges to the deserving patient, at the time of need for his services, never or rarely is depreciated in the patient's eyes.

Since many families, with increasing federal withholding taxes already here, are forced to budget all of their earnings, it is necessary that physicians assist their patients in this regard. In obstetrics especially it is good practice for the young persons and for the doctor to agree on a monthly payment schedule suitable to the patient's economic status.

For example, at the termination of the first visit and examination, the wise doctor will tell the patient, "My usual charge for your type of case is $10 for this visit, and $10 or $15 each month for six months. This charge will include two months follow-up care after your baby is born, barring some unusual or complicated happenings, which can occur only about twice in 100 cases. Is this arrangement satisfactory with you?" If there is any reason that this usual routine cannot be followed, the patient usually says so, and the agreed-upon method of payment is noted on her record then and there before her eyes. The same type of statement can be used to terminate any doctor's rendering care to his patient. If any unusual drug, laboratory, or x-ray service is rendered, the patient appreciates and deserves a short explanation as to why the extra charges are made.

The success of any practice, both from the patient's and the doctor's standpoint, demands that sufficient time be taken by every doctor to discuss with each patient in simple language his ailment, his treatment schedule or response, and his social and economic problems incident to the illness. Fees are at least one-third of every illness in the patient's eyes.

What about fees for operations? Largely, that is the area in which doctors are given, at times deservedly, a black eye. In my pinion, no doctor can deserve that dignified title who charges ny person more than one month's income (after taxes) for ny type of operation. If that simple rule is followed and the perating physician explains to the patient what is included in he fee, there will be fewer than one-tenth of one per cent comlaints by patients.

Tell the patient that the charge for anesthetizing him will be 20. Tell the patient that the charge for an assistant, required or his personal protection as well as for the doctor's help, will be $25 or $50. Tell him that the usual charge for the repair or removal of this or that organ in this community is $125, $175, or $250. When fees are honestly explained and their total agreed upon prior to operation, the problem of collections is virtually nonexistent.

In cases of emergency, the doctor's first responsibility is to care for the patient's needs. After this is done, either he or the patient may bring up the matter of fees. In either situation, it is incumbent upon the doctor to explain to the patient the usual charges and why they are made. When such a procedure is followed, little difficulty ensues in collecting for services rendered.

"Fee splitting" still goes on and will go on as long as two or three per cent of the doctors are like an equal or higher percentage of the bankers, lawyers, or politicians. Human nature, being what it is, insures that the unscrupulous will always be with us. Fee splitting is bad for the sick, because it leads, through love of money, to meddlesome, unnecessary treatment and operations that promise more to satisfy the participating doctor's curiosity and temporarily increase the size of his pocketbook than to help the patient.

Patients may suspect that their money is being "divided up," but basically they want to know, "Who gets how much for doing what?" When they eventually find out that physicians participate in fee splitting, the reputations, the dollar intake, and perhaps even the conscience of the participating doctors usually suffer. Needless to say, the increasing "take" of the federal tax collector is going to make operating and treating for money alone an activity of diminishing value to doctors.

Display on your own desk the A. M. A.'s placard addressed "To All My Patients," which says, "I invite you to discuss frankly with me any questions regarding my services or fees."

The two most important elements in America's progress have been the spirit of religion and the spirit of science or knowledge. The spirit of religion went out of our federal government nearly 20 years ago and has been replaced by the greatest collapse in morality in government seen since the decline of Rome. The spirit of knowledge or science has pushed forward, but, unless we increase in wisdom, which is basically a religious force, an increase in knowledge alone will only bring sorrow for us as persons and as a free nation.

One hundred and thirty years ago, John Quincy Adams' code was: "The more of pure moral principle that is carried into policy and conduct of government, the wiser and more profound will that policy and government be." John Quincy Adams' philosophy is eloquently true in the matter of fees charged and collected by doctors. The one unpardonable sin in medicine is the failure to consider at all times what is best for the patient from the standpoint of diagnosis, treatment, and fees.

The money we collect from our patients must always be reverently regarded as only a partly satisfactory medium by which patients can express their grateful hearts and souls, and we doctors must, in humility, accept fees for acting as guides to Divine Providence in His works.

THE "REGARDLESS OF ABILITY TO PAY" IDEA

Joseph F. Donovan, San Jose, Calif.

I appreciate very much the honor of being asked to participate in this Public Relations discussion and to report our experience with a public offering by the local county medical society of a guarantee to provide medical care for all, regardless of the ability to pay, medical care being that portion of the services rendered by physicians.

I do not need to tell anybody that everyone has always loved the game of getting something for nothing. Today's lure of the "daily double," the "giant jackpot," and the "royal flush" have had their counterparts in every age and every era from the time Nero rolled dice until the present-day period, when radio's telephone guessing games offer as high as a million dollars in prizes —and all for free!

It was in December of 1946, however, that many critical doctors in the San Francisco Bay area thought that that month would go down in history as the greatest on record for giant jackpots. That is the month that the Alameda County Medical Society took a quarter page advertisement in all of the daily newspapers in their county in an effort to reach a reading audience of over 750,000 persons, to tell them that anyone who needed medical care and had to have it without cost could get it simply by calling the office of the county medical society and stating their case.

I saw the advertisements. They were very attractive. They commanded attention. The top portion of the ad had a large facsimile of a page torn from the classified want ads section. "Wanted," said the headline, "anyone needing the services of a physician and feeling that they are unable to pay for it. Immediately contact the Medical Society. Call Twinoak 3367."

Those advertisements created quite a stir, not only in the county but throughout the state. Even the governor of California got unhappily enough concerned about them to issue some pretty strong critical statements to the press. He said he did not like them, and he did not believe them.

But the advertisements and their offer of guarantee of medical care for all were not fake, not a publicity gimmick. They were

---

Executive Secretary, Santa Clara County Medical Society.

set in a firm foundation. Even five years later, the promise of the offer still stands good, and, on top of that, the offer has been tried out and tested and found successful in many counties other than Alameda.

My county, Santa Clara, for example, was one of those that agreed to follow the thought patterns set by Alameda and apply them to our own particular situation. We have about one-third the population and about one-third the number of physicians that Alameda County has. We have 300 doctors and 225,000 persons, if you are interested in statistics.

We have long since come to learn that these advertisements are not a trick or a false propaganda device. They are a means of giving current-day action to a promise centuries old, the promise contained in the oath of Hippocrates. Truly speaking, this "guarantee offer" is merely a matter of putting new words to old ideals.

In our own county, we did not use duplicates of the Alameda advertisements. We prepared a set of our own. First, the executive committee and the public relations committee decided they would adopt the principle contained in the guarantee and set up the mechanism to handle the calls that would come from the public. Before the first advertisements were printed, our plans were carefully correlated to the work done in the social service department of our county hospital. We agreed to work together very closely and consolidate the findings of our experience with the hospital. When the ads were ready, enough proof copies were made for one to be sent to every member of the county society, after it went before the council of the county society. The council, composed of 14 members, received the first copy, and it was not a very comfortable half-hour discussion. There are always one or two who are opposed to what the general trend seems to be, and one of the members of the council said, "Well, if ever I have seen anything crazy, this is it, because I do not know how we can possibly take care of the number of persons that will be rapping on your door tomorrow morning after that first advertisement comes out."

Fortunately, the aggressive public relations committee chairman put it on a personal basis, as he said, "Fred, you are a specialist. We might have to call on you as a result of one of these advertisements. Fred, have you taken a few patients and not charged them anything?"

"Of course, you know I have," said Fred.

"Well," he said, "suppose we call you tomorrow and say we have three cases that are in your specialty, will you take care of them?"

"Sure."

Then we went around the room—there was no question about it.

They did not have too much trouble handling the inquiries that came in, but is it not much more important, in such a functional matter that the physicians believe in their hearts that they can render this service to their individual patients as they can? What difference does it make if it is offered on a general basis? I was not concerned with whether we could handle the inquiries. I was concerned as to whether our physicians would support the program.

The council voted approval. Copies of the ads were mailed to every member, with a ballot for their response. They could cast their votes three ways: (1) in favor of the general advertising; (2) in favor or against publicizing the guarantee for care; and (3) in favor or against the publicizing of our fee complaint committee service. Returned ballots came from approximately 50 per cent of the membership, and the overwhelming affirmative vote was 125 to 4 for the program.

On April 19, 1949, the first advertisement appeared in the morning paper, and we held our breath. That afternoon we got two calls. The next day, one more; the third day, another call; but, by the end of six months, there had only been 59 calls altogether, and one-half of those were requests for obstetric care from medically indigent nonresidents who were denied care because of certain county ordinances. (That problem has since been licked, by the way.)

There has never been a time when, possibly with one exception, we weren't able to comply, and that was the case of the lady who came in with tears in her eyes and said she had a difficult problem. She told me about her three children and that she needed three surgical procedures. She said that she felt that she could call on the medical society and they would help her.

I said, "What sort of surgery are you talking about?"

She said, "My youngest son needs to be circumcized, and my oldest boy needs his tonsils out, and my husband needs to be sterilized."

Our ads were not a "one-shot" offer. The offer was repeated in 12 consecutive advertisements. Special feature stories about the program appeared 12 times in three different newspapers during a two year period. The offer still stands, and the program seems to be working well.

Requests come to the society from all sources, and not necessarily from the newspaper advertisements alone, for the program has been strongly called to the attention of every local social worker, to all the public health nurses, the public school nurses, school department heads, the Red Cross, the voluntary health agencies, and every other unit that might ordinarily come in contact with persons needing medical care.

We have estimated that if each of our 300 doctors were willing to take three cases a year, we would be able to handle a load of approximately 900 requests, and so far we are not even approaching 50 per cent of such a possible volume. The original vote of the Medical Society obligates every member to accept a reasonable number of cases.

Our society staff consists of myself and one secretary. We handle all of the requests. We get assistance from our bureau of medical economics staff of six, which is in the same office. It is a bureau that is operated on the principles set up by Stanley Mauck's organization. After the requests are evaluated, doctors are called in rotation, and in only one instance have we ever had a refusal to take a case. All of the rest have said yes, in what we believe to be a phenomenal acceptance average of approximately less than 60 seconds per request.

I told you in the beginning that I was very critical and apprehensive when this program started in Alameda County. As you see, I have reversed myself completely through our own experience with it. I think it is the best plank that a county medical society can have in the public relations platform. I don't think that there is anything that could be devised that will be more effective than this particular program.

One instance was called to my mind because of the comments of Dr. Cyrus Anderson this morning, when he referred to the incident of the newspapers playing up the need of someone for medical care, the little child about to die, and the usual thing that goes along with that.

Actually, such an instance in our county in 1948 was the thing that made us agree to go ahead with this guaranteed medical care program. A youngster about 6 years old was declared to have nephritis, and it was said she would die if she didn't get the serum, and she needed the services of a physician. The services were being rendered by the physician, but it was one of those sensational, well-written front page news stories that snowball. It appeared in the newspapers in our town and was attracting attention in every state in the Union, in Mexico, and in Canada, and $14,000 rolled in to help that little girl.

That was not enough—an Army sergeant in Tokyo broke up a crap game and sent us the $143.

Twice since then two newspapers have had an opportunity to duplicate their 1948 experience, but they have not done it. They have contacted our office, or the president of the county medical society, have gotten the facts of what needed to be done, and have gone along by helping to see that the family got the care that was needed, which the papers stated was more important than running a sensational front page story.

When we come face to face with some of the "do-gooders" who tell us there are dozens of persons in this town going without medical care, we are able to say, "That is interesting to us; would you get us the name of the first lady you would like to have taken care of in the group you are talking about?" In one instance, we needled a small group for three weeks trying to get the name of the first person they were talking about. It is surprising but very pleasing to see the reactions when we follow up on the false claim that there are hundreds of persons going without care. At the same time, it is a great source of satisfaction when you find someone who really needs it, who is going without it, simply because he just does not know where or how to find the physician who will be willing to take care of him without charge.

Our doctors are not operating the jackpot I referred to earlier. They are just being good doctors and good neighbors. We believe that medical public relations are better in those local counties where the guaranteed medical-care-for-all plan exists, because in those counties the ethical physican, who will abide by the solemn promise never to turn his back on human suffering because he might not get paid, is not a mythical character. He is not someone whose name can't be remembered in times of sickness or apparent need. He is easy to find, because he is the total local medical profession. He is the county medical society.

PR FACTOR IN COLLECTING BILLS

Stanley R. Mauck, Columbus, Ohio

My association with the profession has been influenced, in part, by a bit of bad medical public relations. A member of my family had been under the care of our family physician, and, on the occasion of an office call, he advised consultation. He walked us across the street to a specialist, who made a brief examination. I received a bill from the family doctor marked "for professional services rendered." The amount seemed reasonable, considering the fact that the service of a specialist had been involved. This, you understand, happened when I was uninitiated into the ways of professional practice.

Thirteen months afterward I received a bill from the specialist for $25. I was angry, and I called the family doctor. "Yes, the charge was in order," he reported. His bill did not include the specialist's fee. He calmed me down somewhat, but he himself did not escape some of my resentment for this unexpected jolt. He should have told me at the time that the specialist would render a separate bill, it seemed to me, and the specialist had done me an injustice by his delayed billing. With my check, I enclosed a letter that plainly indicated that the good doctor's public relations had not been enhanced by the transaction.

At the time of this incident, I was giving consideration to starting a service of business management for doctors in Columbus, and the experience helped to confirm my belief that doctors needed my management service. For two years, I operated a private business service for doctors, which, in addition to better control of the doctor's accounts receivable problem, also included income tax work, monthly practice analysis, and a general consultation service in business and professional matters.

During this period I learned a lot about the public relations aspect of medical practice and was challenged by the need for a broader and more comprehensive type of service. The result was the organization, in January, 1935, of the Columbus Bureau of Medical Economics, which was one of the first professionally controlled multiple service business bureaus for physicians in the country. The management service I had previously rendered became a department of the new bureau, to which were added such additional functions as a 24 hour telephone answering service, a collection department, a professional budget plan, centralized bookkeeping and credit reporting.

In 1936 we took dentists into the organization, which is operated as a nonprofit service corporation under official approval of both the academy of medicine and the dental society. It is controlled by a board of trustees elected by the physicians and dentists who are members of the bureau. We have 48 persons on our staff, and we occupy an office suite of approximately 4,000 square feet.

Early in our operations we felt that the bureau's usefulness could be extended beyond the scope of the individual doctor's office and invited the academy of medicine to use our office as permanent headquarters. All of our facilities and personnel were placed at the academy's disposal. For the past 17 years, I have served jointly as director of the bureau and executive secretary of the academy.

Unquestionably, this close affiliation between the academy and the bureau has been of great advantage to both organizations. It has enabled the academy to enjoy adequate administrative and office facilities to meet the need for an ever-expanding program, and at a cost far below the amount necessary to duplicate the service on an independent basis. It has enabled the bureau to integrate its functions closely with the needs of the profession, with due regard to the public relations factor in all phases of the business service rendered.

Out of this experience I hold a deep conviction that the chief public relations factor in bill collecting relates to the doctor's own office rather than the collection agency. Expressed in another way, we might say that good public relations—like charity—begin at home, and that doctors themselves are responsible for much of the bad public relations growing out of collecting their fees.

The personal experience related above is by no means an isolated case. Long-delayed billing is not so prevalent as it was 25 years ago, but it remains a fundamental weakness in many offices. In a recent county medical society bulletin, a report of the grievance committee was given. Grievance No. 4 related to a complaint about an anesthesia bill for $44.50, received eight months after service. The debtor had no knowledge of the service, and the amount seemed stupendous. Investigation by the committee cleared the doctor, but the report contained two significant comments: 1. Had the surgeon advised the patient about the service of the anesthesiologist, there probably would not have been a complaint. 2. Careless handling of the charge, as reflected by the eight months' delay in billing, contributed to the complaint. This is another typical example of bad public relations unnecessarily incurred by poor business methods in the doctor's office.

Sporadic billing and little or no follow-up of slow accounts are other factors accounting for bad public relations. Delinquency in regular billing begets delinquency in payment. By a loose system of billing and follow-up of accounts the doctor invites slow pay and possibly utter disregard of the obligation. A serious delinquency should not be charged against a patient until he has been made conscious of what is expected of him in the way of payment.

The climax in these situations, public relations-wise, comes when the patient, lulled into indifference by the doctor's unbusiness-like office procedure, suddenly learns that his old account has been turned over to a collection agency. Often such accounts are paid promptly, but with a sullen protest that is harmful to the profession. Frequently they are complicated by complaints, as the value of professional service varies in inverse ratio to the time when it was rendered, especially if the bill has been turned over for collection. An account should not be placed with an agency, and it is an injustice to the patient to do so, unless and until the doctor's own office is certain that it cannot be collected in any other way.

Poor business procedure often backfires against the doctor in another area of neglect. It is not possible for the busy office, especially in larger cities, always to know about the indigent, the medically indigent, and the confirmed hardship cases. However, too often they are overlooked. Failure to obtain adequate information about a patient on the first call is often the cause. It is the responsibility of the doctor's office to determine which are the indigent patients whenever possible and to handle the charge accordingly. There is nothing more conducive to bad public relations than the reaction of the patient when bills of this character are turned over for collection.

There is another category of patients for whom doctor bills often present a distressing financial problem. I refer to the so-called white collar group—the clerks, stenographers, teachers, and low-to-medium-salaried persons. Most of them are self-supporting and manage to make ends meet by careful budgeting; however, a siege of sickness in the family or surgery is often a financial blow. They deserve consideration when costly medical care is required.

These observations are not mere generalities, they are supported by facts, and to get these facts I asked the manager of our collection department to make a careful sampling of the ac-

---

Executive Secretary, Columbus Academy of Medicine.

counts in our files. The object was to determine why accounts are referred to us for collection. His finding follows, based on 1,612 accounts selected at random from our collection files.

WHY ACCOUNTS ARE REFERRED FOR COLLECTION

Inadequate Handling in Doctor's Office.—There were 656 cases (41%) in this group. Delinquency here was due to delayed or irregular billing, incomplete data when account was set up, charge not made to responsible party, misunderstood services and charges (consultation, anesthesia, x-ray, lab fees, and industrial claims), no discussion about payment arrangements, extreme age of accounts, etc.

Hardship Cases.—In this group, there were 353 cases (22%), including patients unable to pay owing to indigency or medical indigency, illness, age, or domestic problems, and those able to pay adjusted fees, or possibly the full amount, if time or a payment plan were offered to tide them over temporary emergencies.

Dissatisfied Patients.—Of those dissatisfied with services, there were 73 patients (5%), and of those dissatisfied with amount of charges, there were 79 (5%).

"Deadbeats" and Reasons for Delinquency Not Known.—There were 148 cases (9%) of "deadbeats" and 303 (18%) cases in which the reason for nonpayment was not known. The latter group paid or agreed to pay without protest. Their delinquency was probably due to neglect or "slow-pay" habits.

These findings speak for themselves and confirm our contention that good public relations in bill collecting begin at home. In the first two categories, we find that 63 per cent of the accounts surveyed represent delinquencies that might have been controlled in the doctor's office. Expressed another way, and generalizing from this survey, it indicates that 63 per cent of the medical accounts referred to collection agencies are needlessly subjected to this PR hazard. If this seems high, let us be conservative and adjust this figure to allow for error and make it 50 per cent instead of 63 per cent. The result still stands as a severe indictment of the way professional men handle the business side of medical practice.

Now that we have challenged the doctors to do a better business job in their own offices, in the interest of better public relations, let us examine the part that agencies play in this picture. In the first place, it should be acknowledged that there is a definite place in professional practice for use of a reliable and properly operated collection service. Persons who are normally self-supporting and pay for other services and commodities should also pay the reasonable cost of medical care. The willful "deadbeat" and the irresponsible patient should not receive "free" medical care through nonpayment of their account. To permit them to do so is gross discrimination against the punctual patient. The judicious use of a responsible collection service is advisable not only to protect the doctor's financial interest but also to insure fairness to the conscientious debtor who pays satisfactorily.

Granting this premise, how, then, should an agency be selected so that the vital public relations factor can be protected in this delicate service?

There is much to be said for the professionally controlled collection service. The number of such bureaus is increasing, prompted largely by the profession's growing consciousness of the public relations factor in bill collecting. The pattern of the multiple service bureau, which we long ago established in Columbus, has also demonstrated its usefulness, public relations-wise, in the operation of services other than collections. The emergency call service is extremely important. Centralized bookkeeping and professional management both help to eliminate some of the previously mentioned unbusiness-like methods that alienate patient good-will. Our professional budget plan contributes to good public relations. Our slogan is, "We would rather prevent bad accounts than collect them." One of the great assets of the professionally owned or controlled business bureau is its ability to do a professional relations job in every service tendered.

Last year Mr. Rember, of the A. M. A. Public Relations Department, made a survey among county medical societies to check their attitude toward collection services. One question was: "Do you think a society operated collection service can do a better job public relations-wise than a private bureau?" Sixty per cent of the replies said "yes," thirty per cent said "no." Ten per cent had no opinion.

The general feeling was that the professionally controlled bureau better understands the special approach and the methods required to protect the doctor-patient relationship and preserve good-will. It is presumed that these bureaus, because they operate within the profession, will be more considerate of the patient and deal with him on the basis of protecting the vital public relations factor. It is pointed out that the commercial agency is likely to be exclusively concerned with the money return and to exact every possible dollar, regardless of the circumstances back of the delinquency.

My observation, however, is that not all professionally controlled bureaus are as public relations conscious as they should be. Some appear to justify their existence by cut-rate collection costs, which is wrong, for this factor should never be the primary consideration in operating a bureau. And the methods used by others are only slightly less objectionable than those used by many private collection agencies. The majority of such bureaus, however, deserve the full support of the profession, because they know and understand the vital importance of public relations in collecting doctors' accounts.

Since it is not practical to organize professionally controlled bureaus everywhere, certain societies are making another approach to the collection agency problem. Mr. Rember's survey revealed that the private bureau, of a certain type, was favored by 30 per cent of the societies responding to his questionnaire. Some are unquestionably operating in a thoroughly satisfactory manner and doing a good PR job. This type of bureau is usually approved by the society or granted official recognition in return for concessions in operating policy that meet the special needs of the profession. A special committee of doctors may serve as liaison between the society and the bureau to consult with and advise the owner regarding policy and operating procedure. By group action, members of a county society may thus dictate and control the collection methods of a reputable private agency that is willing to cooperate with the society, to the mutual advantage and benefit of both parties. Such an arrangement is worthy of consideration when local circumstances are favorable.

I have been connected with business bureau operations for 19 years and have studied this service in many cities. We have a National Association of Medical-Dental Bureaus, composed of both professionally controlled and privately owned bureaus that make a specialty of rendering business services to doctors The purpose of the association is to develop higher standards in medical business bureau work, to promote a better understanding of how the special needs of the professional office may be met, and to exchange ideas for greater operating efficiency. The association has performed a useful function in developing business bureaus that deserve the confidence and support of the profession.

Out of my many contacts with bureaus of both types, I agree that it is possible for a privately owned bureau to serve the profession satisfactorily in the field of collections. To do so, however, the agency must be different from the many commercial agencies that are totally void of any appreciation of the delicate PR factor in collecting for doctors. The management of the agency must know and understand the problems of professional practice and be governed by collection policies that conform to good public relations standards. The form or the type of organization best suited to handle professional accounts may be debatable, depending on local conditions, but what is not debatable is that the factor of public relations is vitally tied in with third party collection procedure and should be of prime consideration in determining the choice of an agency, whether it is professionally or privately controlled.

In our national association work, I have preached this gospel constantly. The professionally controlled bureaus usually follow this principle in collection work. We are endeavoring to have the private bureau use this approach also. It is disconcerting, however, to have some of these bureaus challenge our public relations gospel by insisting that the doctors demand results rather than reports. Unfortunately, this is true in many cases. While the A. M. A. is stressing good public relations in bill collecting, the "grass roots" doctor does not yet realize that a lot of public relations dynamite is tied up in the way his bad accounts are handled when they leave his office. It is difficult to expect the independent commercial agency to be more public relations conscious than are the doctors themselves.

Where neither professionally controlled bureaus nor approved private agencies are available, what, then, are the doctors to do about their bad accounts? *Obviously, it is up to the individual* doctor to select an independent collection service that he believes will most nearly handle the accounts in the right manner. Here are a few precautions that it might be well to remember when making such a choice: 1. Select a local agency with a reputation for reliability and good standing in the community. 2. The out-of-state and mail-order type of agency should be avoided. 3. Investigate the methods used, and ask to see the type of first notice and other follow-up material. 4. Check up on the ownership and financial responsibility of the agency and its promptness in settling for money collected. 5. As a general rule do not sign a contract—better agencies seldom use them. 6. Make sure that no legal action, or threat of such, will be taken without your consent. 7. Be sure the agency will be governed by your instructions to collect only within the scope of good public relations. 8. Have the agency agree to report cases deserving your special consideration and accept adjustment, withdrawal or cancellation of an account when, in your opinion, such action is advisable in the interest of good public relations.

If these standards cannot be met by any local agency it is better not to use any collection service at all. Money collected on bad accounts through the tactics of the unscrupulous and hard-boiled collection agency is a poor offset against the loss of good-will for the individual doctor and the profession in general. It should be remembered, however, that the number of accounts requiring collection agency attention can be reduced materially, probably 50 per cent or more, by proper attention to the doctor's accounts receivable problem in his own office. In summarizing these observations of a county medical society executive, we may make the following observations. The manner in which financial transactions are handled between doctor and patient vitally affects medical public relations, and the primary responsibility for this problem relates to the doctor's own office. Failure to recognize the importance of this problem and lack of attention to the business side of medical practice account for much of the bad public relations growing out of charges for medical care.

Fifty per cent, or more, of the medical accounts submitted r collection can be disposed of more satisfactorily at the rce. The choice of a proper collection service is extremely ortant, when outside collection assistance is clearly indited. Professionally controlled bureaus, particularly those rendering multiple business services, have demonstrated their public relations value to the profession, and their number is increasing. County societies have also found it possible to work out satisfactorily arrangements with acceptable private agencies or bureaus to handle collections and render other services in an ethical manner; an independent commercial collection agency should be very carefully selected when neither of the two preferred types of business services is available.

In conclusion, may I submit these recommendations: first, that the American Medical Association use its facilities more effectively to educate all members of the profession about the PR factor in bill collecting and that it provide from Chicago, through the proper department or bureau, greater practical assistance to county societies that are interested in organizing specialized business services that are adapted to the needs of the profession; second, that state associations, through their journals and other media for influencing professional attitudes, give more attention to the public relations factor in collection methods and that they stress the importance of this subject; and third, that county societies become more alert to the economic aspects of medical practice and that they explore the possibility of solving, by group action, some of the business problems that are related to the preservation of good public relations, [illegible] in the area of collections.

It is [illegible] opinion that the public relations factor in collecting [illegible] is of sufficient importance to warrant more [illegible] on all three levels of organized medicine.

WHERE DO WE GO FROM HERE?

Leo E. Brown, Chicago

"Where Do We Go From Here, Boys—Where Do We Go From Here?" was first sung by the doughboys in France during World War I, when they were sweeping victoriously across Europe. They were on the move and wanted to keep going.

So it is with our medical public relations program—it's on the move—much progress has been made—but where do we go from here, boys, where do we go from here? One thing is certain—we have to be continually on the move if we are to attain and maintain medicine's rightful and covetous position in the minds and hearts of the American people.

In an organization as large as the A. M. A., composed of over 130,000 physicians practicing more or less independently, bound together into 1,987 county medical societies and 53 state and territorial societies, we must expect some difference of opinion, some outstanding PR programs, some not so outstanding. In certain areas some county societies are pulling the load of societies less active and alert. Certain states are carrying a portion of the load belonging to other states and occasionally to the A. M. A. The point I want to emphasize is that we are all in this together—each must do his share—as we join forces for better PR.

A horse can't pull while kicking
This fact I merely mention.
Neither can he kick while pulling
Which is my chief contention.

In order to improve public attitudes toward the American Medical Association, we plan to work directly with the public, with other departments within the A. M. A., with state and local medical societies, and with individual physicians. We also plan to coordinate the Association's programs and policies for improving the health of the American people with other organizations which have similar objectives.

The public relations program of the American Medical Association logically divides itself into two phases: internal and external. The internal phase is concerned primarily with relationships between the A. M. A. and other medical organizations and between the A. M. A. and the individual physician. The external phase is concerned primarily with the attitudes of the public toward the medical profession, either as individuals or as groups. With these thoughts in mind, the Department presents the following general public relations objectives for the coming year. 1. To gain public support for the American Medical Association by informing the people of the policies, objectives, and accomplishments of the Association. 2. To strengthen the support of members for the American Medical Association by making known to them the objectives, accomplishments, and services of their Association. 3. To improve physician-patient relationships by encouraging the physician to administer his services promptly, efficiently, and courteously, with understanding of the patient as an individual, and in line with the first sentence of the Principles of Medical Ethics: "The prime object of the medical profession is to render service to humanity. . . ." 4. To encourage our constituent state and county medical societies similarly to continue and expand their own public relations activities, thereby cementing physician-patient and community relationships at the grass roots. 5. To work toward the solving of the economic problems arising from the cost of illness.

The Public Relations Department hopes to contribute to the attaining of these general objectives by telling the A. M. A. story to the public and the profession through the use of the following PR media. Our weekly news releases on medical science, Association policy, and activities and socioeconomic items affecting medicine will continue to be sent to some 1,350 newspapers, magazines, wire services, and science writers across the country. You all are familiar with the work entailed in publicizing your own state meetings. You can multiply that many times for a national meeting. Last year in Atlantic City 79 writers representing 59 publications covered the Convention and were serviced by our PR staff. Throughout the year many special news stories will be released on the activities of our councils,

---

Director, Department of Public Relations of the American Medical Association.

committees, and bureaus. We expect to follow up misleading news stories, articles, editorials, and letters to the editors when they are brought to our attention; however, this is a tremendous job and can be handled much more judiciously at the local level.

Special service will be given to state and county societies promoting special medical editions in their local papers by supplying news stories on such subjects as A. M. A. activities and medical progress. During the coming year we plan to prepare a series of feature stories on medical progress, making them available to all daily and weekly newspapers and industrial publications.

The acceptance and support of our literature preparation and distribution program during the past year merits its continuation. Commenting on the brochure "A Doctor For You," one physician said in a letter to Dr. Lull, "Congratulations! This is just what I have been hoping for. This is a real educational campaign that every doctor can be proud of. If our A. M. A. Education Campaign can keep up this high standard of public education, Oscar Ewing will not have a chance."

The editorial on display from the Springfield (Ohio) News indicates their approval of this positive program.

During 1952 we have scheduled five brochures and two magazine reprint mass mailings to the entire profession. These are to cover such subjects as "It's Your A. M. A.," a brochure enlisting membership support of the A. M. A.; "How the A. M. A. Serves the Public," which is designed to inform the public that they are the recipients of many of the Association's activities: "This Is the Code Your Doctor Lives by," which is intended to take the mysticism out of the Code of Ethics and interpret it as a protective code for each individual patient.

"The Cost of Medical Care" and "How to Pay Your Medical Bills" are popular brochures that explain some of the techniques discussed by the panel participants this morning. Other pamphlets such as "What Makes an M.D.," "Help Yourself to Health," and "Medical Careers" will be developed as time, personnel, and budget permit. We also plan two or three pamphlets for the physician and his staff on "Office PR."

The number of reprints from popular magazines to be distributed through our membership will depend upon the number of suitable worthy articles published. We estimate that there will be at least six that will be selected and sent out in two different mailings. The method of distribution will follow the procedure used this year. Pamphlets and reprints will be mailed direct to the individual physician, with order cards for acquiring additional quantities direct from the A. M. A. We should like to encourage state and county societies to promote the distribution of these pamphlets and reprints through their membership newsletters, journals, and bulletins. The A. M. A. mailings will also be sent to many national associations, organizations, libraries, hospitals, and colleges. We hope you will distribute this literature at your rural health meetings, health councils, county fairs, health fairs, public schools, P. T. A. service clubs, and all other outlets at your command.

Publicity service to A. M. A. Councils, Committees, and Bureaus will continue to be an integral part of our PR program. News, radio, television, and photographic coverage of the Rural Health Conference, Industrial Health Conference, Congress on Medical Education and Licensure, Council on National Emergency Medical Service, and the Student A. M. A. will be handled by the PR Department.

I should like to mention that day-to-day activities in the field of radio, television, exhibits, and films are handled by other A. M. A. departments, with the PR Department acting in an advisory capacity.

We expect to continue and expand our service to magazine editors and free lance writers. During the past year, 65 editors and free lance writers received special assistance with writing projects. This service includes information service, manuscript reviewing, and suggesting articles. This service paid off in 60 articles, which appeared in 35 mass circulation magazines last year. Two top-ranking national publications clear all of their medical articles through the A. M. A. office before scheduling them for publication.

In an effort to improve our interassociation relations during the coming year, we propose to arrange for the A. M. A. to be the host of the executive officers of major national organizations in the U. S. We expect to invite such groups as the Farm Bureau, Cotton Council, National Education Association, Parent-Teachers Association, American Association of University Women, the Business and Professional Woman's Association, American Bar Association, A. F. of L., C. I. O., and others to be our guests at 535 North Dearborn Street, Chicago. We have nothing to sell—our only object is to acquaint them with the work of the A. M. A. and how it serves the public and the profession.

Time forces me to only outline other phases of our 1952 program.

We propose to reedit the Association's film, "M.D., the U. S. Doctor," into two or three 10 minute films; to make available 3¼ by 4¼ slides on A. M. A. activities, with accompanying script to all state medical societies for distribution upon request to their component societies; to provide state journal editors with information each month on what's new at the A. M. A.; to continue publishing the "Convention Daily Bulletin," the "Secretary's Letter," and the "PR Doctor Exchange"; and to assist in program planning and implementation as an important part of our field service. We welcome your requests for personal visits and conferences and will make every effort to comply. We will continue our special services to the Secretary and General Manager's Office, assistance and suggestions in the preparation of speeches and articles for the officers and Trustees, and the promotion of our annual PR conference. We propose to: (1) continue the promotion of impartial "grievance committees"; (2) continue the promotion of 24 hour emergency call services; (3) to encourage the physicians to police their own ranks and take disciplinary action against members guilty of unprofessional and unethical conduct; (4) become civic-minded, active in worthy community affairs, and publicly stand for high morals in government; and (5) encourage our state and county medical societies to support and promote other Association activities, such as school health, civil defense, and rural health, as an integral part of their own PR program.

While our office plaque—"To All My Patients"—was made available this year, we sincerely hope that you will incorporate its promotion into your 1952 program. We feel that half of our PR problems result from misunderstandings between doctor and patient and that these plaques can do much to promote doctor-patient understanding, if properly displayed and if sympathetic follow-through is practiced by the doctor.

Perhaps one of the most important phases of our PR program will be the continuation of our National Education Campaign during this coming crucial election year. The defeat of socialism might very well be termed our chief 1952 public relations problem. This must be done at the community level, because national opinion is the sum total of the public attitude of local communities.

The Public Relations Advisory Committee, made up of state society executive secretaries and PR directors, has been of inestimable value in planning and implementing our program. This committee has made it possible for us to keep informed of your needs and suggestions and to plan our program accordingly. I sincerely hope that you will consider them as your liaison officers and use them accordingly.

The cooperation we have received from our state and county medical societies has been excellent, and I want you to know it is appreciated. You have joined forces with us, and I trust we can continue to pull together.

We have made mistakes during the past year—we will make some during the coming year. There are many things to be done, goals to be achieved, but we are moving ahead and, with your help, will continue to progress.

GRANTS FOR RESEARCH

Individual grants up to $500 are available through the Subcommittee on Grants-in-Aid of the Committee on Research of the Council on Pharmacy and Chemistry. These grants are intended primarily for the purpose of stimulating therapeutic research. The funds may be applied to defray expenses attendant to research, with the exception of salaries and services. Applications may be secured by addressing Dr. E. M. K. Geiling, Chairman, Subcommittee on Grants-in-Aid, Committee on Research, Council on Pharmacy and Chemistry, American Medical Association.

STATE LEGISLATION

Arizona

Bill Introduced.—H. 2, proposes the creation of an Arizona **State Board of Nurse Registration and Nursing Education** for the licensing and regulating of professional and practical nurses.

Colorado

Bills Introduced.—S. 13, to amend the **uniform narcotic act,** proposes the addition of laws regulating the sale of hypnotic drugs. No specific definition of "hypnotic" drugs is contained in the proposal. S. 20, to amend the law relating to **narcotic drugs,** proposes to make it unlawful to sell, dispense, or administer a narcotic drug to persons under the age of twenty-one (21) years.

Delaware

Bill Introduced.—S. 6-x, proposes the creation of a **tuberculosis commission** to have the duty of administering and executing all of the laws of the state relating to the prevention and/or the eradication of tuberculosis.

Kentucky

Bill Introduced.—H. 5, to amend the **narcotic drug act,** proposes the death penalty for person who sells, supplies, or prescribes narcotic drugs to persons under twenty-one (21) years of age in violation of the narcotic drug law.

Massachusetts

Bills Introduced.—H. 17, to amend the law relating to the **practice of chiropody,** proposes to define a chiropodist as one who holds himself out as being able to diagnose, treat, or prescribe for any disease, pain, injury, deficiency, deformity, or other condition of the human foot or who offers or undertakes by any method to diagnose, treat, or prescribe for any disease, pain, injury, deficiency, deformity, or other condition of the human foot or who, except on the written prescription of the registered chiropodist or physician, or by the use of impressions made by a registered chiropodist or physician, directly or indirectly by mail, carrier, personal agent, or by other methods, supplies, constructs, reproduces, repairs, adds, or directs the application of any substance to foot appliances, or places such appliances in the shoe or adjust the same. H. 19, to amend the law relating to the examination of school children's feet, proposes to permit **chiropodists as well as physicians** to make the necessary examination. H. 20, to amend the law regulating the use of bodies of deceased persons and the **promotion of anatomic science,** proposes to permit the use of such bodies by approved schools of chiropody. H. 71, to amend the workmen's compensation act, provides for the appointment of **qualified, impartial physicians** to examine injured employees and to make reports of such examinations. H. 83, to amend the law relating to **examinations of school children,** proposes to prohibit school children from attending public school if they are infected with a disease dangerous to the public health or live in a household where such an infection or exposure exists. H. 84, to [illegible] the **hospital licensing law,** permits the state department of health [illegible] emporarily suspend licenses of institutions which are operating in a [illegible]er dangerous to the public health and also to issue temporary [illegible]ses to institutions which qualify therefor. H. 147, proposes the construction and maintenance of a **school of medicine** on the school campus of the University of Massachusetts in Amherst. H. 169, proposes to repeal certain provisions of law making admissible in evidence, in cases of contract or tort for malpractice, certain statements of fact or opinion contained in published treatises, periodicals, books, and pamphlets. H. 223, proposes that any person who is found to be suffering from **tuberculosis** in a communicable stage shall be detained in an appropriate hospital under the supervision of the department of public health. H. 292, proposes the establishment of a **school of medicine** by the University of Massachusetts. H. 317, proposes the enactment of a **cash sickness compensation law.** H. 354, proposes the establishment within the division of registration of an agency to be known as the **Approval Authority for schools training medical technologists.** This authority would have jurisdiction over standards, inspection, and licensing of medical technology schools or other agencies training physiotherapists, laboratory technicians, and x-ray technicians. H. 520, proposes to require all **persons addicted to narcotics** to register with the medical division of the state department of public health. H. 600, proposes the creation of a **medical school** by the University of Massachusetts in metropolitan Boston. H. 732, proposes the creation of a board of registration of **sanitarians** to license persons desiring to practice in the field of sanity science and technology. H. 739, proposes the enactment of the creation of a board of registration of dispensing opticians for the licensing of such practitioners. H. 741, proposes to authorize the department of public health to make an investigation relating to the availability of doctors for emergency calls in cities and towns of the commonwealth. H. 842, proposed the erection of a **medical school** in the city of Boston to be affiliated with the University of Massachusetts. H. 847, proposes the establishment of a **school of medicine** as a part of the University of Massachusetts. H. 850, proposes the establishment of a **school of medicine** by the University of Massachusetts. H. 916, to amend the motor vehicle act relating to **blood tests** in connection with the trial of persons charged with operating a motor vehicle under the influence of intoxicating liquor, proposes that evidence indicating that there was at the time of the accident 5/100% or less by weight of alcohol in a person's blood shall be prima facie evidence that such person was not under the influence of intoxicating liquor and that evidence that there was at that time from 5/100% to 15/100% by weight of alcohol in his blood shall be relevant evidence but not prima facie evidence indicating whether or not the person was under the influence of intoxicating liquor. H. 1057, proposes the creation of a special commission to make an investigation relative to the sale, furnishing, delivery exchange, and the use of **narcotic drugs** within the commonwealth. H. 1058, to amend the law relating to **nacotic drugs,** proposes to eliminate the words "a person under the age of twenty-one (21) years" in the penalty section so that the penalties will apply to any person. H. 1059, to amend the law relating to **physical therapy,** proposes to permit the licensing of persons without examination if they were engaged in the active practice of physical therapy in a competent manner for three (3) years immediately preceding Nov. 30, 1951. H. 1061, proposes to direct the commission on alcoholism to make a continuous study of methods for treating **narcotic users** and other factors relating to the problem of narcotics. H. 1248, proposes the creation of a **lien** on accident and liability insurance policies **in favor of hospitals** treating persons insured thereunder. H. 1258, proposes the enactment of a law establishing a system of **compulsory nonindustrial accident and health insurance benefits.** H. 1268, proposes to require that **copies of medical records,** reports of hospitals, clinics, and physicians be furnished to the employee or his attorney. H. 1293, proposes regulations applicable to persons engaged in **animal experimentation.** Licenses would be issued by the commission of public safety but only after the board of registration in medicine had filed a certificate to the effect that the applicant is of such reliability or training or education as to reasonably qualify him to take part in such experiments and that they will be performed only in places or institutions possessing adequate and humane facilities. H. 1294, proposes to require every person who purchases or acquires a dog, cat or bird for purposes of **animal experimentation** to keep a record thereof and submit it to the commissioner of public safety. H. 1393, proposes the creation of a **hospital recreation commission** to foster, stimulate, and promote community and organization interest in volunteer recreation and entertainment programs in the hospitals of the Commonwealth. H. 1401, proposes the creation in the department of industrial accidents of a council on industrial health and safety. H. 1513, proposes the enactment of a **nonoccupational diability benefits law.** H. 1615, proposes that **nonprofit service corporations** be declared to be charitable corporations. H. 1682, proposes to memorialize the Congress of the United States to pass legislation extending the provisions of the **social security act** so as to include provisions for workmen's compensation, cash sickness, and retirement benefits. H. 1764, proposes that any employer who maintains a clinic, dispensary, or hospital for the treatment of injured employees shall furnish such employee or his attorney with copies of **reports of all medical examinations** of the employee while at such clinic, dispensary, or hospital. S. 135, proposes that **motor vehicle number plates** assigned to members of the medical profession should bear thereon in addition to the numerals the letters "M.D." S. 197, proposes the enactment of a **cash sickness compensation law.** S. 198, to amend the workmen's compensation act, proposes that the record of the **history, examination, diagnosis, or treatment** of an employee shall not be furnished to any employer or to his or her agents by any doctor, physician, surgeon, nurse, or other person who shall examine, treat, or attend an employee, **unless the employee consents** thereto in writing. S. 199, proposes the enactment of a **diability benefits** law. S. 203, proposes the enactment of a **cash sickness compensation law.** S. 345, proposes to direct the department of public health to establish an **alcohol clinic** in the city of Pittsfield. S. 346, proposes the creation of a special commission to make a study of the **cancer** problem in the state. S. 347, proposes the creation of a **board of registration of chiropractors** and defines chiropractic as the science of locating and removing, by hand adjustment only, interference with the transmission or expression of nerve force in the human body, by the correction of misalignment of subluxations of vertebral column. The practice of chiropractic would exclude operative surgery, except that the x-ray and analytical instruments may be used solely for the purposes of examination. S. 348, to amend the medical practice act, would prohibit the **graduates of medical schools located outside of the United States** or its territorial limits from taking an examination for a license. S. 409, proposes the enactment of a licensing law for the regulating of **nursing homes.**

Rhode Island

Bills Introduced.—H. 548, proposes that no **settlement or general release** signed by any person confined in a hospital or sanitarium as a patient with reference to any personal injuries sustained by such person shall be admissible in evidence, used or referred to in any mannr at the trial of any action **to recover damages for personal injuries** or consequential damages resulting therefrom, which statement, settlement or general release was obtained within 15 days after the injuries were sustained and such settlement and release shall be null and void unless at least five (5) days prior to the obtaining or procuring of it the injured person has signified in writing his willingness that the release be given. H. 572, proposes that a statement of fact or opinion on a subject of science or art contained in a published treatise, periodical, book, or pamphlet shall, in the discretion of the court, and if the court finds that the statement is relevant and that the writer is recognized in his profession as an expert, be admissible in actions of contract or tort for **malpractice, error or mistake against a physician,** surgeon, dentist, optometrist, hospital and sanitariums as evidence tending to prove said fact. The proposal would also require however, that notice of the intention of using such statement shall be given to the adverse party at least three (3) days before the trial.

South Carolina

Bill Introduced.—H. 1662, proposes the enactment of a **uniform narcotic drug act.**

Prepared by the Bureau of Legal Medicine and Legislation.

MEDICAL NEWS

CALIFORNIA

Railroad Blood Donor Car.—A specially equipped railroad blood donor car, named "The Life Line," was dedicated in San Francisco in November at a ceremony sponsored by the Southern Pacific, which built and will operate the car over its lines, and by the Irwin Memorial Blood Bank of the San Francisco Medical Society, which will staff the car and supervise the extensive blood procurement project. A. T. Mercier, president of the railroad, dedicated the car at the conclusion of a morning program. The principal address was given by Dr. John W. Cline, San Francisco, President of the American Medical Association. Keys to the car and passes with which the staff can travel on Southern Pacific lines to and from duty aboard the blood donor car were presented by Mr. Mercier to Dr. Paul M. Aggeler, president of the Blood Bank Commission. First major collection of blood on "The Life Line" started at Sacramento in December. From there the car moved to other parts of California and will go through Nevada, Utah, Oregon, Arizona, New Mexico, and into Texas, reaching persons in isolated areas who have not had an opportunity to donate blood. This train has been put in operation to enable civilian and military residents in rural communities to give blood for their friends and to establish "blood insurance" for themselves and their families, to collect blood for the military in Korea, and to build a plasma reserve for the armed forces. When the car is operating within the territorial boundaries of the twelve community blood banks in the California Blood Bank System, the Red Cross, or community blood banks in other states, the society's blood bank will coordinate the blood program with these banks.

COLORADO

Midwinter Postgraduate Clinics.—These clinics are being sponsored by the Colorado State Medical Society and will be held February 12-15 with headquarters at the Shirley-Savoy Hotel in Denver. Papers will be read in addition to the cases that are to be presented in various clinics. Luncheon and roundtable discussions will be held at the hotel. Guest speakers include Drs. Preston T. Brown, Phoenix, Ariz.; Herbert Conway, New York; Francis D. Murphy, Milwaukee; Henry K. Ransom, Ann Arbor, Mich.; Robert D. Taylor, Cleveland; Robert Wartenberg, San Francisco, and William Barry Wood Jr., St. Louis. The registration fee is $5.

CONNECTICUT

County Society Appoints Executive Secretary.—Joseph L. Gordon has been appointed executive secretary of the Hartford County Medical Association. He was formerly advertising and business manager for the *Brookline (Mass.) Chronicle*, and has been a staff writer for United Press. The appointment furthers action taken at the association's last annual meeting, when it voted to develop a long-range administrative and public relations program.

ILLINOIS

Conference on the Common Cold.—The common cold will be discussed at an area luncheon and afternoon meeting, sponsored by the Common Cold Foundation, to be held at the Palmer House, Chicago, February 13. The guest speaker at the luncheon will be Dr. Thomas G. Ward, associate professor of bacteriology, Johns Hopkins University, Baltimore, who will point out areas in which research would be most effective. Executive and medical directors of industrial plants are being invited to attend the conference. In the afternoon at a panel discussion, Dr. Edward C. Holmblad, managing director, Industrial Medical Association, Chicago, will serve as moderator. The speakers will be Drs. Andrew L. Banyai, Milwaukee; Noah D. Fabricant, Clayton G. Loosli, Arthur K. Peterson, and Leon Unger, all of Chicago, and Dr. Ward. Dr. William A. Sawyer, Rochester, N. Y., medical consultant for the Eastman Kodak Company, is president of the Common Cold Foundation and Dr. Charles M. Hendricks, Chicago, is executive director.

Chicago

University Appointment.—Dr. William Saphir has been appointed clinical assistant professor of medicine at the University of Illinois. A graduate of the Medical School of the University of Vienna, Dr. Saphir is a member of the attending staffs at Cook County, Michael Reese, and Chicago Memorial hospitals.

West Side Medical Center.—Dr. Walter H. Theobald was reelected president of the West Side Medical Center Commission December 18. Others elected were Dr. Karl Meyer, vice-president, C. Hilding Anderson, secretary, and Carl Stockholm, treasurer. These three replace officers whose terms expired last July. New members appointed by Governor Stevenson at that time are Dr. Andrew C. Ivy, Homer J. Livingston, and Stephen A. Mitchell. The commission approved its proposed budget for 1952, which includes $375,000 for land acquisitions. This amount is one-half of the legislative appropriation for the next two years.

LOUISIANA

Society News.—Dr. James D. Rives, New Orleans, was elected president of the Surgical Association of Louisiana at the annual meeting in New Orleans November 11. Other officers reelected include Dr. Henry G. Butker, secretary, and Dr. Edmund L. Leckert, treasurer.

Course in Legal Medicine.—An intensive short course in legal medicine and elements of medicolegal litigation will be conducted for trial lawyers February 27-March 4 at the Jung Hotel in New Orleans by the law-science program of Tulane University. It is designed for practicing attorneys who handle civil litigation involving personal injuries and disabilities. Dr. Hubert Winston Smith, professor of law and legal medicine, will direct the course. It will deal with basic knowledge of body structure and function; identification, causes and effects of various types of physical and mental injuries, and the conduct of legal cases involving such injuries. Outstanding medical specialists, legal scholars, and trial lawyers from various parts of the country will conduct the course. In addition, an advanced course will be conducted simultaneously for practicing attorneys who attended last year's program. Tulane's law-science program was established in 1949 for the study, promotion, and improvement of legal medicine and the scientific application of medical knowledge in the solution of problems. Dr. Smith holds degrees in both medicine and law from Harvard University and professorships in both the college of law and the school of medicine at Tulane.

MICHIGAN

Society News.—The annual meeting of the Michigan Pathological Society was held at the University Hospital in Ann Arbor December 8. The program consisted of a slide seminar on diagnostic problems. Dr. Walter A. Stryker of Wyandotte was elected president, and Dr. James G. Christopher of Detroit, president-elect. Dr. C. Allen Payne of Grand Rapids was reelected secretary-treasurer. The next meeting was scheduled for February 9 at Henry Ford Hospital, Detroit, the program to be devoted to clinical pathology.

NEBRASKA

University Apointment.—Dr. Willson B. Moody, associate professor of medicine, has been appointed chairman of the department of medicine at the University of Nebraska College of Medicine, Omaha, succeeding Dr. Harold C. Lueth, dean of the medical college, who resigned this chairmanship because of the press of duties as dean.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

NEW YORK

Postgraduate Instruction.—Dr. Charles T. Dotter, New York, will address the Ulster County Medical Society February 5 at 9 p. m. in the Governor Clinton Hotel in Kingston on "Angiocardiography." The Onondaga County Medical Society on February 5 at 8:30 p. m. in the University Club in Syracuse will hear Dr. Fred J. Hodges, Ann Arbor, Mich., speak on "Recent Advances in X-Ray Diagnosis." On February 7 the Unity Hospital staff will meet at the hospital in Brooklyn at 10:30 a. m. to hear a lecture by Dr. George P. Heckel of Rochester on "Practical Application of Endocrinology in Gynecology." Dr. George E. Anderson, New York, will speak on "Diabetes Mellitus—Its Modern Interpretation and Treatment" at a meeting of the Montgomery County Medical Society at the Elks Club in Amsterdam February 12 at 6 p. m. Following a dinner at 8:30 Dr. William P. Given, New York, will address the group on "Practical Application of Endocrinology in Gynecology." These lectures are provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

New York City

Ward Teaching Programs.—City Hospital, Welfare Island, announces a practical ward teaching program under the direction of Dr. Carl Reich, visiting physician first medicine. The course will extend from February 1 to May 1 and is free to members of the medical profession.

Exhibit of Lavoisier Memorabilia.—An exhibition of printed works by and memorabilia of the French chemist, Antoine-Laurent Lavoisier (1743-1794), will be held at The Grolier Club, 47 E. 60th St., February 19 through March 30. Lavoisier's name is associated with the overthrow of the phlogistic doctrine that dominated the development of chemistry for over a century and with the establishment of the foundation of modern science.

Lectures on Medicinal Chemistry.—The current status of medicinal chemistry is the subject of a 10-week lecture series to be sponsored by the New York Section of the American Chemical Society. Ten speakers, each a specialist in his field, will present the lectures on Wednesday evenings at 7 p. m. starting February 13 in the auditorium of the Central Commercial High School, 214 East 42nd St. Cost of the series to society members will be $10; to non-members, $20. Applications should be forwarded to ward S. Todaro, Eimer & Amend, 633 Greenwich St., New ork. Topics and speakers are as follows:

February 13, Alfred Burger, Ph.D., Charlottesville, Va., Chemical Structure and Biological Activity.

February 20, Arnold D. Welch, Cleveland, Water-Soluble Vitamins Concerned with One- and Two-Carbon Intermediates.

February 27, Bernard D. Davis, Washington, D. C., Metabolic Aspects of Chemotherapeutic Action and Drug Resistance.

March 5, Dr. Murray J. Shear, Ph.D., Bethesda, Md., Growth and Its Chemical Inhibition.

March 12, Jackson P. English, Ph.D., Stamford, Conn., Chemotherapy of Tuberculosis.

March 19, Karl P. Link, Ph.D., Madison, Wis., Anticoagulants.

April 2, Otto Krayer, The Cardiovascular System and Drugs Acting on It.

April 16, Gregory G. Pincus, Sc.D., Worcester, Mass., Chemical and Biological Transformation of Steroids.

April 30, Klaus R. Unna, Chicago, Drugs Acting on the Neuromuscular System.

NORTH DAKOTA

Society News.—New officers of the North Dakota Society of Obstetrics and Gynecology include Dr. Robert B. Woodhull, Minot, president, and Dr. John S. Gillam, Fargo, secretary-treasurer. The next meeting will be held May 13 in Fargo.

PENNSYLVANIA

New Offices in Health Department.—Three new offices in the Pennsylvania Department of Health were announced recently by Secretary of Health Dr. Russell E. Teague. The new Office of Professional Training will be directed by Karl M. Mason, who comes from Pittsburgh, where he was director of the Pittsburgh Field Training Center, which trains public health personnel. The Office of Statistics and Records, to be directed by Albert E. Bailey, Ph.D., will be composed of three units: the Bureau of Vital Statistics, directed by George E. Greenwood; the Statistics Processing Section, with Thomas Gardner in charge, and a Statistical Analysis Section, yet to be developed. Dr. Bailey comes from the National Office of Vital Statistics, U. S. Public Health Service, Washington, D. C., where he was assistant to the chief of the office. Dr. Clarence D. Barrett will be the new medical training officer for the Department of Health and has been assigned as director of the local public health "pilot" unit established in Butler County. He served as a public health administrator in several counties in Ohio and Michigan, and for seven years was chief of the Bureau of Communicable Disease Control of the Michigan State Department of Health. He also served as director of Ingham County and Michigan Training Center.

Philadelphia

Honor Hospital Staff President.—Dr. John W. Bransfield, president and chief of the surgical department of Doctors Hospital, was honored January 17 at the annual staff banquet. Dr. Bransfield, who is also professor of oral surgery at the Graduate School of Medicine of the University of Pennsylvania and co-developer of the Dorrance-Bransfield operation for cleft palate, received the hospital's symbolic gavel, as he began his second year as president of the hospital. A second feature of the evening was a talk on the use of color television in medical education by Joseph N. DuBarry, assistant to the president of Smith, Kline & French Laboratories. Mr. DuBarry has been instrumental in the development of the medical application of color television over the past two and a half years.

Pittsburgh

Course in Slit-Lamp Microscopy.—A course in the practical application of the slit-lamp microscope and newer methods in gonioscopy will be given by the department of ophthalmology of Montefiore Hospital February 25-29. The course, limited to 35 physicians, will be under the direction of Dr. Harvey E. Thorpe. It will include management of intraocular foreign bodies, glaucoma surgery, and the use of corticotropin (ACTH) and cortisone in ophthalmology. The fee is $100. Information may be obtained from the Secretary, Committee on Graduate Education, Allegheny County Medical Society, 225 Jenkins Bldg., Pittsburgh 22.

TENNESSEE

Courses in Electrocardiography.—The Memphis Heart Association is sponsoring a series of practical electrocardiography sessions at the Institute of Pathology in Memphis, Room 107, every other Monday at 7:30 p. m. that began January 21. All physicians, residents, interns, and medical students of Memphis and the nearby area are invited. Tuition for physicians is $20 for the entire year; no tuition will be charged residents, interns, and medical students. This course is a cooperative venture of the resident staffs of the Baptist Memorial, St. Joseph, Methodist, and Veterans Administration (Kennedy) hospitals. If attendance warrants, there will be out-of-town guest speakers.

New Postgraduate Medicine Department.—The University of Tennessee Medical Units, Memphis, has just established a department of postgraduate medicine, under the direction of L. W. Kibler, for 15 years field director for the postgraduate medical education program of the Tennessee State Medical Association. The association's training program will be continued by George Cummings, former assistant alumni secretary of the University of Oklahoma at Norman. Efforts will be made by the university to determine what the professions want in postgraduate training to improve medical service in the broadest sense. In addition to courses for physicians, dentists, pharmacists, and nurses, training will be offered to x-ray technicians, medical technologists, and other auxiliary medical personnel. It will offer intensive courses of three days' to two weeks' duration to all practitioners. First attention will be given to the needs of physicians in general practice, but programs for specialists and members of related health fields will be included as the need warrants.

VERMONT

Community Health Fair.—The first community Health Fair in New England was held in Chester December 1-2 under the joint sponsorship of the Windsor County Home Demonstration Groups and the newly organized Ellsworth Medical Group. The fair received support from the Vermont Cancer Society, Vermont Heart Association, Vermont Tuberculosis Association, the poliomyelitis foundation, and many others. Exhibits were set up in the high school gymnasium, and movies on a variety of health subjects were shown. Free urine examinations (and blood sugar determinations when indicated) and free chest x-rays were made at the Ellsworth Clinic. The evening programs in the gymnasium consisted of talks by prominent speakers on cancer, diabetes, heart disease, poliomyelitis, and the American Red Cross Blood Bank Program.

WEST VIRGINIA

Society News.—Dr. Claude R. Davisson of Weston was elected president of the Central West Virginia Medical Society at the regular dinner meeting held at Buckhannon November 15. Dr. James R. Glasscock of Richwood was named vice-president, and Dr. Theresa O. Snaith of Weston was reelected secretary-treasurer.

Heart Association Drive for Funds.—The West Virginia Heart Association is sponsoring its third annual drive for funds. The slogan for the campaign is "New Hope for Hearts." The quota for this year's drive is fixed at $70,000. The total collected in 1951 was $33,000. Four heart diagnostic clinics for the medically indigent are being operated in West Virginia at Wheeling, where there are two, and in Huntington and Charleston. It is planned to have qualified speakers appear in every county in the state. These meetings will be arranged through secretaries of the county groups. Clinical sessions will be provided when requested, and all component medical societies of the state medical association will be urged to devote at least one meeting a year to presentation of papers on diseases of the heart. The association has pamphlets and motion picture films available for use over the state. Copies of the list will be sent to all interested doctors. Dr. Howard R. Sauder of Wheeling is president of the West Virginia Heart Association, and Dr. William E. Bray of Huntington is secretary. Offices are located at 1206 Kanawha Blvd. in Charleston.

GENERAL

International College of Surgeons Regional Meetings.—Dr. Henry W. Meyerding of Rochester, Minn., president, United States Chapter, International College of Surgeons, announces six regional meetings to be held in 1952 as follows:

Birmingham, Ala., Tutwiler Hotel, February 15-16, Paul W. Shannon, chairman.
Pittsburgh, William Penn Hotel, March 13-14, Elmer S. A. King, chairman.
Tulsa, Okla., Mayo Hotel, March 28, Andre B. Carney, chairman.
Detroit, Hotel Statler, April 24-25, Warren W. Babcock, chairman.
Kansas City, Mo., President Hotel, April 27-29, Claude J. Hunt, chairman.
Colorado Springs, Colo., Broadmoor Hotel, May 2-3, Kenneth C. Sawyer, Denver, chairman.

Surgical papers will be presented and panel discussions led by outstanding speakers at each of the regional meetings.

National Cancer Conference.—This conference will be held at the Netherland Plaza Hotel in Cincinnati March 3-5 under the sponsorship of the American Cancer Society, the National Cancer Institute, and the American Association for Cancer Research. The general sessions speakers are as follows:

Richard H. Overholt, Boston, Virus Pneumonia, Tuberculosis, Cancer—That is the Problem.
Alexander Haddow, London, Experimental Induction of Prostatic and Bladder Neoplasms.
Alfred A. Gellhorn, New York, Clinical Evaluation of Chemotherapy in Neoplastic Diseases.
Richard H. Chamberlain, Philadelphia, Radiation in Cancer Therapy.
George N. Papanicolaou, New York, Present Status and Probable Future of Exfoliative Cytology.
George T. Pack, New York, End Results in Treatment of Melanoma.
Eugene P. Pendergrass, Philadelphia, Cancer Potential of the Silent Lung Shadow.
Alexander Lipschutz, Santiago, Chile, Tumorigenic and Anti-Tumorigenic Properties of Steroids.
Owen H. Wangensteen, Minneapolis, Surgery of Alimentary Tract Cancer.

Clinical papers will be presented as well as panel discussions on cancer of the breast, genitourinary tract, the head and neck, female genital tract, gastrointestinal tract, and the lung, and lymphoma and leukemia. Research panels will discuss radiobiology, genetics, cytology, chemotherapy, isotopes, virology, and steroid endocrinology in relation to cancer. The meeting is open to all physicians.

Poliomyelitis Foundation Grants.—The National Foundation for Infantile Paralysis has announced that research and teaching institutions throughout the United States and Canada have just been awarded March of Dimes funds for poliomyelitis studies and professional education. Twenty-three medical schools, hospitals, and research institutions in this country and one in Canada will receive $1,775,393. This sum brings to about $29 million the amount provided since 1938 by the March of Dimes for furthering research and for training professional personnel. In addition, the foundation has spent more than $120 million for patient care during those years. These awards are administered at the national foundation headquarters and are made on the recommendation of committees from each of the professions concerned. The board of trustees approved about $300,000 for paying "a justifiable portion of the indirect costs of research that are not reflected in the usual budget of a research project." These costs include heat, power and light, building maintenance, and other similar operating charges.

Surgeons Sectional Meetings.—The American College of Surgeons will hold a section meeting at the Chalfonte-Haddon Hall, Atlantic City, N. J., February 11-12. The program includes panel discussions on Breast Tumors, with Dr. Frank E. Adair, New York, as moderator; Surgery on Diabetic Patients, with Dr. William F. MacFee, New York, as moderator; Hysterectomy: Total, Subtotal, or Vaginal, with Dr. Lewis C. Scheffey, Philadelphia, as moderator, and Bleeding from the Gastrointestinal Tract, with Dr. Champ Lyons, Birmingham, Ala., as moderator. Symposiums will be presented on trauma and cancer. A special program for ophthalmologists and otorhinolaryngologists will be given on February 12.

Another section meeting is scheduled to be held at the Chateau Frontenac in Quebec City, in recognition of the centenary celebration of Laval University. The program includes the following panel discussions:

Diagnosis and Treatment of Breast Tumors, Robert M. Janes, Toronto, moderator.
Intestinal Obstruction, Roswell K. Brown, Buffalo, moderator.
Emergencies Arising During Operation, Samuel F. Marshall, Boston, moderator.
Bleeding from the Gastrointestinal Tract, John D. Stewart, Buffalo, moderator.

There will also be symposiums on trauma and cancer. Dr. Paul R. Hawley, Chicago, director, American College of Surgeons, will address each section at dinner meetings.

Heart Association Awards for Research.—Thirty-seven established investigatorships and research fellowships totaling $185,650 were recently awarded by the American Heart Association for the development of new and improved methods of treatment, care, and prevention of heart disease. The awards are the first of this year's allocations from contributions made by the public to the 1951 heart fund and provide for studies to be conducted during the fiscal year beginning next July. Within the next few months additional awards in the form of grants-in-aid to institutions will be announced by the association to round out the fourth successive year of its national research support program in the cardiovascular field. Apart from this national program, affiliates of the American Heart Association throughout the country make research awards in their areas. Last year the total amount spent on research by the American Heart Association and its affiliated heart associations throughout the nation was more than $1,000,000. The 1952 heart fund drive, to be conducted throughout February, will make available substantial new funds to carry forward this research program.

The research scientists who will receive awards are engaged in a wide range of investigations. The latest research awards of the American Heart Association provide for continuation of 9 established investigator fellowships, 5 new established investigator fellowships, 11 research fellowship renewals, and 12 new research fello

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Forensic Sciences, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of General Practice, Atlantic City, N. J., March 24-27. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

American Association of Anatomists, Providence, R. I., March 19-21. Dr. Normand L. Hoerr, 2109 Adelbert Road, Cleveland 6, Secretary.

American College of Radiology, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Psychosomatic Society, Chicago, March 29-30. Dr. Sydney G. Margolin, 714 Madison Ave., New York 21, New York, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Central Surgical Association, Toronto, Can., March 6-8. Dr. James T. Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St., Chicago 1, Secretary.

Michigan Clinical Institute, Book-Cadillac Hotel, Detroit, March 12-14. Dr. H. G. Cummings, 606 Townsend St., Lansing 15, Chairman.

National Conference on Medical Service, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., Secretary.

National Conference on Rural Health, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

New Orleans Graduate Medical Assembly, Municipal Auditorium, New Orleans, March 10-13. Dr. Woodward D. Beacham, 1430 Tulane Ave., Room 105, New Orleans 12, Secretary.

North Pacific Society of Internal Medicine, Portland, Ore., March 22. Dr. R. L. King, 1115 Terry Ave., Seattle 1, Secretary.

Sectional Meetings, American College of Surgeons:

Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.

Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.

Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

Minneapolis, Radisson Hotel, March 24-26. Dr. Harvey Nelson, 78 South 9th St., Minneapolis 2, Chairman.

utheastern Allergy Association, Augusta, Ga., March 21-22. Dr. atharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

heastern Surgical Congress, Atlanta, Ga., March 10-13. Dr. njamin J. Beasley, 701 Hurt Bldg., Atlanta 3, Ga., Secretary.

uthwest Allergy Forum, Hotel Baker, Dallas, Texas, March 2-4 Dr. James Holman, Medical Arts Bldg., Dallas, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary-General.

Congress of the International Diabetes Federation, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

International College of Surgeons, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

International Congress of Haematology, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

International Congress of Internal Medicine, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

International Congress on Neuropathology, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

International Congress of Physical Medicine, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

International Union Against Tuberculosis, Rio de Janeiro, Brazil, Aug. 24-27. Prof. Etienne Bernard, 66 Blvd. St.-Michel, Paris 6e, France, Secretary-General.

Latin American Congress of Physical Medicine, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

Pan-American Congress of Gastroenterology, Mexico City, D.F., May 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico City, D.F., Secretary.

Pan-European Congress of Gastroenterology, Bologna, Florence and Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Orsola, Bologna, Italy, Secretary.

United States-Mexico Border Public Health Association, Monterrey, Nuevo Leon, Mexico, March 17-19. Dr. J. C. Ellington, 314 U. S. Court House, El Paso, Texas, Secretary.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Part II*, April 21-22; *Parts I and II*, June 16-18 or June 23-25; *Part I*, September. All centers where there are five or more candidates. Exec. Sec., Dr. John P. Hubbard, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Various Locations, July 18. Final date for filing application was Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

American Board of Dermatology and Syphilology: *Written.* Various centers. March 1952. *Oral.* Chicago, May 1952. Final date for filing application was Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine: *Written.* Various centers and overseas, Oct. 20. Closing date for the acceptance of applications for the written examination will be May 1. *Oral.* New Orleans, Feb. 14-16; Cleveland, April 17-19; Chicago, June 5-7, San Francisco, September or October; New York City, November or December. Exec. Sec.-Treas., Dr. William A. Werrell, 1 West Main Street, Madison 3.

American Board of Neurological Surgery: *Oral.* Chicago, May 1952. Final date for filing applications for the May 1952 examination was Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

American Board of Obstetrics and Gynecology: *Oral.* Chicago, June 9-13, 1952. Final date for filing application was Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Practical.* Philadelphia, May 29-June 3; Chicago, Oct. 6-10 and New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Otolaryngology. Toronto, May 13-17; Chicago, Oct. 6-10. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

American Board of Pediatrics: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., Mar. 21-23; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Physical Medicine and Rehabilitation: *Parts I and II.* Chicago. June 8 and 9. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

American Board of Preventive Medicine and Public Health. *Written.* Berkeley, Calif., Minneapolis, New Orleans and Baltimore. April 18. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

American Board of Proctology. *Part I.* Kansas City, Minneapolis, Philadelphia and San Francisco. May 3. Examination includes both oral and written examinations in the basic sciences. *Dates and places tentative.* Sec., Dr. Louis A. Buie, 102-110 2d Ave., S.W., Rochester, Minn.

American Board of Psychiatry and Neurology: Chicago, June 13-14. Final date for filing applications is March 15. New York City, Dec. 15-16. Final date for filing applications is Sept. 15. Sec.-Treas., Dr. David A. Boyd, Jr., 102-110 Second Ave. S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Spring 1952. Final date for filing application was Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Surgery: *Written.* Various Centers. March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb. 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

Board of Thoracic Surgery: Various parts of the country. *Written.* Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Mallory, Tracy Burr ⊕ Boston; born in Boston, Oct. 26, 1896; Harvard Medical School, Boston, 1921; professor of pathology at his alma mater and the Harvard Medical School, Courses for Graduates; at one time professor of pathology and bacteriology at Tufts College Medical School; specialist certified by the American Board of Pathology; member and in 1949 vice-president of the American Association of Pathologists and Bacteriologists; since 1947 member of the board of governors and secretary-treasurer of the College of American Pathologists; past president of the New England Pathological Society and of the International Association of Medical Museums; member of the American Society of Clinical Pathologists and the American Society for Experimental Pathology; a lieutenant colonel in the medical corps, Army of the United States, during World War II; chief, department of pathology and bacteriology at the Massachusetts General Hospital from 1926 to September, 1951, when he became consultant to the department of pathology; assistant editor of the *American Journal of Pathology* from 1940 to 1943; consulting Editor of Case Records of the Massachusetts General Hospital in the *New England Journal of Medicine;* died November 11, aged 55, of carcinoma of the lung.

Sager, William Warren ⊕ Richmond, Va.; born in Woodstock, Va., Jan. 8, 1898; George Washington University School of Medicine, Washington, D. C., 1922; member of the Medical Society of the District of Columbia, George Washington University Medical Society, and the Association of Military Surgeons of the United States; fellow of the American College of Surgeons; formerly an associate clinical professor of surgery at his alma mater; during World War II was on active naval duty from 1942 to 1945; among the posts he held were chief of a general surgery section at the Naval Medical Center in Bethesda, Md., and chief of surgery aboard the hospital ship, *U. S. S. Sanctuary;* formerly fellow in surgery at the Mayo Foundation in Rochester, Minn.; in 1948 named a medical adviser to the Selective Service Director of the District of Columbia; for many years practiced in Washington, D. C., where in 1934 he was appointed a member of the Board of Police and Fire Surgeons by the district commissioners, was attending surgeon at Gallinger Memorial Hospital and George Washington University Hospital, and associate surgeon at the Children's Hospital; on the staff of the Veteran Administration Hospital in Richmond; specialist certified by the American Board of Surgery; in 1945 co-winner of the Sir Henry Wellcome Award of the Association of Military Surgeons of the United States for an essay on blast injury; died in the Veterans Administration Hospital recently, aged 53.

Jones, Edgar ⊕ Nashville, Tenn.; born in Readyville, Tenn., Oct. 20, 1903; Vanderbilt University School of Medicine, Nashville, 1929; associate professor of medicine at his alma mater; specialist certified by the American Board of Internal Medicine; at one time on the faculty of the University of Rochester School of Medicine and Dentistry in Rochester, N. Y.; fellow of the American College of Physicians; member of the American Clinical and Climatological Association; died in the office of Vanderbilt University Hospital, where he was a member of the staff, October 27, aged 48, of coronary occlusion.

Evans, Charles E., Tullahoma, Tenn.; Vanderbilt University School of Medicine, Nashville, 1907; city health officer; formerly member of the board of aldermen of Tullahoma; died October 17, aged 79.

Ford, Claude Heard ⊕ Birmingham, Ala.; Emory University School of Medicine, Atlanta, 1927; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; on the staffs of the Highland General, Baptist, St. Vincent's, and Jefferson-Hillman hospitals; died recently, aged 50, of coronary thrombosis.

Gale, William Sherman, Osborn, Mo.; Barnes Medical College, St. Louis, 1905; member of the American Medical Association; formerly secretary of the DeKalb County Medical Society; served as county coroner, mayor, and president of the school board; vice-president of the Bank of Osborn; died October 28, aged 75, of chronic myocarditis.

Gaynor, Joseph, Los Angeles; Universita Karlova Fakulta Lékarská, Praha, Czechoslovakia, 1920; member of the American Medical Association; died recently, aged 58.

Hamilton, Samuel Green, Tuscaloosa, Ala.; Medical College of Alabama, Mobile, 1902; member of the American Medical Association; died in Druid City Hospital October 11, aged 81, of hypostatic pneumonia following fracture of the hip.

Hudson, Joseph Haskell, Gough, Ga.; Medical College of Georgia, Augusta, 1912; member of the American Medical Association; affiliated with Jefferson Hospital in Louisville; died in University Hospital, Augusta, recently, aged 60, of coronary thrombosis.

Kupersmith, Michael, New York; New York Homeopathic Medical College and Flower Hospital, New York, 1928; died recently, aged 46, of coronary thrombosis.

McLoon, Mary Anne ⊕ St. Louis; University of Minnesota Medical School, Minneapolis, 1923; for many years physician for the board of education of St. Louis; on the staff of Deaconess Hospital; died in St. John's Hospital October 29, aged 63, of cerebral hemorrhage and hypertension.

Martin, John Wesley ⊕ Paris, Ill.; Barnes Medical College, St. Louis, 1907; president of the Edgar County Tuberculosis Society; at one time county coroner; died in Paris Hospital October 27, aged 69, of coronary thrombosis.

Matthews, Reginald Allen, Barberton, Ohio; Western University Faculty of Medicine, London, Canada, 1909; member of the American Medical Association; died in Townsend, Ga., October 7, aged 64, of pulmonary edema, arteriosclerotic heart disease, and diabetes mellitus.

Ockington, James William ⊕ Lakewood, Ohio; St. Louis University School of Medicine, 1930; served overseas during World War II; on the staffs of St. John's Hospital and Lakewood Hospital, where he died October 19, aged 47, of acute myocardial infarction.

Orland, Frank Sydney, Philadelphia; Temple University School of Medicine, Philadelphia, 1922; member of the American Medical Association; died October 25, aged 53, of acute coronary occlusion.

Smith, Charles Mansfield, Portsmouth, Ohio; Vanderbilt University School of Medicine, Nashville, Tenn., 1934; member of the American Medical Association; fellow of the American College of Surgeons; served during World War II; one of the owners of the Smith-Everett Hospital; on the staffs of Mercy and Portsmouth hospitals; died in University Hospital, Columbus, October 11, aged 43, of acute hemorrhagic pancreatitis.

Sullivan, Robert Emmet, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1906; for many years affiliated with Central State Hospital in Lakeland; medical examiner for fraternal orders; died October 13, aged 74, of virus pneumonia.

Turberville, Joe Ivey ⊕ Century, Fla.; Medical College of Virginia, Richmond, 1929; member of the Southeastern Surgical Congress and the Industrial Medical Association; fellow of the American College of Surgeons; served during World War II; an owner of Turberville Hospital; killed in Alabama October 20, aged 48, in an automobile accident.

Watson, Chester Aubrey, Ballinger, Texas; University of Arkansas School of Medicine, Little Rock, 1908; died October 7, aged 70, of multiple myeloma.

Woodman, Ernest Lester Jr., Marblehead, Mass.; Tufts College Medical School, Boston, 1939; member of the American Medical Association; served in the medical corps of the U. S. Naval Reserve in the South Pacific area during World War II; certified by the National Board of Medical Examiners; died recently, aged 39.

⊕ Indicates Fellow of the American Medical Association.

GOVERNMENT SERVICES

ARMY

Medical Society Meetings on the Battlefield.—The following information concerning this subject was received from Dr. Albert S. Hyman, 450 E. 63rd St., New York City: "Continuing the discussion concerning the first medical society to be organized and function on the battlefield (THE JOURNAL, Nov. 17, 1951, page 1156 and Jan. 12, 1952, page 127) I would like to say for the record that the first meeting of the South Pacific Medical Society was held at Noumea, New Caledonia, on Sept. 2, 1942. The Solomon Islands Medical Association was organized at Espiritu Santos, New Hebrides, on Jan. 8, 1943; the Guadalcanal Section held its first meeting on Jan. 12, 1943, while the battle was at its height."

Grant to Study Edema and Dehydration.—The Quartermaster Division of the Army has made a grant of $40,000 to the department of biochemistry of Northwestern University Medical School, Chicago, to extend investigations on edema and dehydration. The work is being done in cooperation with the Research Service at Veteran's Administration Hospital, Hines, Ill., and with the Army's Climactic Research Laboratory, Lawrence, Mass.

Dehydration is especially important because it affects the efficiency of the soldier as well as his ability to recover from wounds. It is a problem the armed forces face in areas where water supply for troops is likely to be frozen, dried up, or contaminated. Study of the amount and distribution of body water will be aided by the use of "tagged" molecules of water containing deuterium (heavy hydrogen).

PUBLIC HEALTH SERVICE

Nurse Officer Assigned to Beirut.—Mary Mills, U. S. Public Health Service nurse officer, has been assigned to the new Point Four Program in Beirut, Lebanon, effective about February 1. She will act as advisor to the Ministry of Health of Lebanon on nursing, and work with local nurse associations and other health officials. En route to Beirut, she will stop in London to confer with the executive secretary of the International Council of Nurses, at the headquarters of the World Health Organization in Geneva for conferences, and in Alexandria, Egypt, for conferences with the nurse consultant to the WHO regional office there.

Miss Mills recently returned from Monrovia where she has been chief nurse of the U. S. Public Health Service Mission in Liberia for five years. During her assignment, she assisted in organizing the Tubman Nursing School in Monrovia, Liberia. Liberia has gone a long way toward establishing nursing as part of the public health program in that country. Miss Mills was active in the establishment of a 25-bed children's wing in the Maternal and Child Welfare Center of the Liberian Government, a health education program, and public health library.

Research on Filariasis.—Dr. Leon Rosen, of the Laboratory of Tropical Disease, National Microbiological Institute of the Public Health Service, has been cited by the South Pacific Commission for his outstanding tropical disease research. For two years Dr. Rosen has been conducting entomological studies of filariasis as part of a research and control project of the Institut de Recherchez Medicales de l'Oceanie at Tahiti, in cooperation with the University of California Medical School at Los Angeles. During the past year he was able to demonstrate that at least one of the mosquito vectors of filariasis will readily become infected after feeding on filariasis patients with very low microfilarial blood counts. Since it was previously thought that such low counts were unimportant in the transmission of filariasis, this finding alters existing concepts of adequate control operations against this disease.

Personal.—Dr. Craig S. Lichtenwalner has been sent to Addis Ababa, Ethiopia, on assignment to the Public Roads Administration, Department of Commerce. He will conduct a preventive and clinical medical program for both American employees and native workers in connection with a road building project. The program is being administered by the Public Roads Administration in cooperation with the Ethiopian Government. A native of the State of Washington, Dr. Lichtenwalner received his medical degree in 1949 and his commission in the Public Health Service in January, 1951.——Two physicians from Lahore, Pakistan, arrived in the United States just before Christmas for four to six month periods of training under the Point 4 program of technical assistance. Dr. Muhammed Aslam Pirzada will study internal medicine, and Dr. A. Aziz Wyne will do special work in general and abdominal surgery. Both men are associated with the King Edward Medical College in Lahore. ——Dr. Justin M. Andrews has been appointed Officer in Charge of the Communicable Disease Center, Atlanta, succeeding Dr. R. A. Vonderlehr, who has been appointed Regional Medical Director for Public Health Service Region VI, succeeding Dr. F. V. Meriwether who has retired.

MISCELLANEOUS

Report on Illinois Mine Disaster.—Ignition of a moving body of gas pushed out of abandoned workings by falling roof and disrupted ventilation set off the explosion on Dec. 21, 1951, which took 119 lives in the Orient No. 2 mine of the Chicago, Wilmington and Franklin Coal Company at West Franklin, Ill., Bureau of Mines investigators reported to Secretary of the Interior.

The initial gas explosion raised and ignited clouds of coal dust that spread the blast and flames through a large part of the active workings of the mine, according to the bureau's report. Many of the men not killed by the extreme violence of the explosion were critically burned, or died as a result of "afterdamp" or carbon monoxide.

Director John P. Forbes of the bureau, interpreting the detailed report, said that one or more other bodies of gas later may have been ignited, causing a secondary explosion.

Secretary of the Interior Oscar Chapman and Director Forbes inspected the mine following the explosion. Forbes directed the 22 bureau men rushed to the scene to aid in rescue and recovery operations and supervised the bureau team of six experts who made the investigation.

The bureau investigators found it difficult to determine the direction in which the forces of the explosion moved as various pieces of heavy equipment had been pushed in several directions. This, together with the fact that the recording indicator at the fan showed two pressure waves with peaks about 3 minutes apart, strongly pointed to the possibility of two distinct blasts of great intensity.

The report of the bureau investigation lists the following conditions as responsible for the disaster:

1. An inadequate ventilating system in which air that ventilates the working sections of the mine first passes open approaches to abandoned and caving areas that contain explosive gas. No provision had been made at the time of the disaster to keep abandoned areas free from accumulations of explosive gas.
2. The operation of nonpermissible electrical equipment capable of igniting gas.
3. The presence of large accumulations of fine coal dust of an explosive nature created by mining operations. "This coal dust," the report says, "principally along roadways, was not removed from the mine or rendered inert by the application of sufficient rock dust."

FOREIGN LETTERS

ECUADOR

Severe Epidemic of Influenza in Ecuador.—Early in November, 1951, a number of cases of influenza appeared in the central provinces of Ecuador. At first, this was not regarded as unusual, since, at this time of the year, small epidemic outbreaks of this disease are common. However, the influenza spread rapidly, affecting a high percentage of the population, particularly in more populous cities, such as Quito and Guayaquil. The first investigation by the health organizations revealed that, in the schools and colleges of Quito, from 25 to 60% of the students were affected by influenza. This induced the Ministry of Public Education to temporarily close all schools, colleges, and universities in the provinces of Pichincha (Quito), Cotopaxi, Tungurahua, and Cimborazo, and to order closure of some educational institutions in other provinces. At present, Quito (230,000 inhabitants) is the city most severely affected by the epidemic. The health and welfare organizations and the Red Cross have coordinated in organizing a campaign to curb the spread of the epidemic and to treat the thousands of patients. There is almost no house in which there is not a person with influenza.

The symptoms are severe, although the outcome of most cases is favorable. Now, however, 17 fatal cases have been reported from the area surrounding Guayaquil. Many of the cases involve persons who have enjoyed good health and who suddenly, without prodromal symptoms, begin to have chills and, one or two hours later, temperatures as high as 39 and 40 C (102 to 104 F), severe headache, and severe muscular and joint pains. Children have the most diverse clinical pictures and the largest number of complications. Some children have a slight fever, accompanied by cutaneous hemorrhages and epistaxis; others have suppurating otitis media. The most frequent complication in children as well as in adults is tracheobronchitis.

The antibiotics are used liberally. Aureomycin and chloramphenicol (chloromycetin®) have given good results, especially if administered early. Both reduce the duration of influenza and lessen the severity of the symptoms. Unfortunately, owing to their high cost, these drugs are reserved for patients with considerable economic resources. Indigent patients are treated without charge by various health and welfare organizations.

NORWAY

Late Results of Resection for Gastroduodenal Ulcer.—In 1949, the medical department of the Haukeland Hospital in Bergen made a curious observation. Twenty-one patients (1% of all the patients) had been operated on for peptic ulcer, and all had suffered from ailments that could be related to peptic ulcer or the operation for it. In the spring of 1950, Dr. A. Drablös, Dr. V. Lindén, and Dr. P. Skjelbred gave follow-up examinations to all the patients who had undergone subtotal gastrectomy for peptic ulcer at the surgical department of the Haukeland Hospital from 1937 to 1946. Among the 492 patients thus treated, there were 313 who were reexamined in 1950 by personal interview, hemoglobin determinations, and erythrocyte counts. The late mortality and serious late complications were expressed in figures outnumbering those of earlier investigations. Anemia was demonstrable in 26.6% of the men and in 41.2% of the women; nervous ailments were found in 21.4% of the patients; and complete, subjective freedom from symptoms was found in 46.6%. Primary mortality, late mortality, and serious postoperative ailments accounted for 20% of the total, whereas "satisfactory results" had been achieved in about 80%.

This investigation, which is reported in full in *Acta Medica Scandinavica*, is a valuable contribution to the solution of the problem of evaluating the comparative merits of conservative and operative treatment for gastric and duodenal ulcer. As the sponsors of this investigation point out, several observations in recent years have reflected adversely on the results of medical treatment, whereas a steady improvement in the immediate results of operative treatment has been reported. At present this treatment is being used with increasing frequency, with recovery reported in as many as 94% of the patients.

Late Results of Thoracoplastic Operations.—In "Thoracoplasty in the Treatment of Cavernous Tuberculosis of the Lung: A Clinical-Statistical Study of the Late Results," Dr. Erling Refsum reports on the value of thoracoplastic treatment of pulmonary tuberculosis. He compares the patients operated on with those who underwent conservative sanatorium treatment for similar lesions at an earlier, prethoracoplasty period. The patients undergoing thoracoplasty were operated on in the surgical department of the Rikshospital in Oslo from 1930 to 1939; the observation period was from 6 to 15 years. The controls were patients who had been given conservative treatment at the Glittre Sanatorium from 1921 to 1928; their observation period was 18 years or more. Dr. Refsum has succeeded in tracing all 391 thoracoplasty patients and 105 of the 106 control patients whose lesions and general prospects were, on the whole, more favorable. In spite of this balance in favor of the control group, the death rate among them was two and one-half times higher than among the patients undergoing thoracoplasty. Although 70% of the controls died within 12 years, 76% of the patients operated on were able to work, and 50% regained full capacity for work, which, in most cases, was heavy manual labor. The results were better for operations on the left than on the right side and better for men than for women. Patients with residual cavities a year after the operation had a high mortality rate, and the results of bilateral thoracoplasty were disappointing. Of the 25 infants born to women undergoing thoracoplasty, 22 were alive and well. Dr. Refsum has concluded that women who have become symptom-free after thoracoplasty can undergo pregnancy and confinement without much risk of aggravating the disease.

SPAIN

Congress of Surgery.—The Second National Congress of Surgery was held recently in Madrid, with an attendance of more than 500 surgeons from Spain and other countries. The inaugural session was presided over by the minister of state. The directors of the congress included Professor Palanca, general director of public health; Mr. Coca de la Piñera, general director of the national department of social assistance; Prof. Lain Entragolo, dean of the University of Madrid; Prof. Martín Lagos, president of the congress; Dr. Puig Sureda of Barcelona; Dr. Crespo Alvarez, president of the general council of medical schools; Dr. Lafuente, professor at the faculty of medicine of Madrid, and Dr. Gonzalez Bueno, general secretary of the congress.

During the congress, scientific sessions were held during the morning and afternoon, and surgical operations were done in various hospitals and sanatoriums. At the first session, presided over by Prof. Martin Lagos, the official topic was indications and technique of exeresis of the lung. Official speakers were Drs. Caralps Massó of Barcelona and Gonzalez Duarte of Madrid. Dr. Gómez Durán spoke on cranial trauma, Drs. García Morán of Oviedo and Val-Carreres Ortiz of Zaragoza spoke on indications and techniques for operation on a patient with bleeding stomach, and Drs. García-Tornel Carrós of Barcelona and Sánchez Bordona of Madrid spoke on evaluation of incapacity from accidents during work. Other speakers were Dr. Gil Turner, who spoke on closure of the main bronchus with gelatin foam in experimental pneumonectomy, and on resection of the lung in pulmonary suppuration and who showed a film, entitled "Pneumonectomy in Bronchiogenic Cancer." Professor Dogliotti of Rome spoke on extracorporeal circulation during exeresis

---

The items in these letters are contributed by regular correspondents in the various foreign countries.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Malpractice: Duty of General Practitioner to Refer Case to Specialist.—The plaintiff filed suit for damages alleged to have been caused by the negligence of the defendant dentist. From a judgment in favor of the plaintiff, the defendant appealed to the Supreme Court of California.

The plaintiff testified that, following a consultation with the defendant dentist, he was told that an impacted left lower bicuspid should be removed. He stated that the defendant said that the extraction of the impacted tooth would be "quite an operation" and "we may have to call in another surgeon on it, a man who is well known, who knows these things well." He said he was not told that a nerve might be severed as a result of the operation. The defendant dentist admitted that he did not warn his patient of the danger of injury to the mandibular nerve, other than to tell him that it was a dangerous operation. But he did tell the plaintiff he had consulted with Dr. Huenergardt, an oral surgeon, and that this man might be called upon to perform the extraction. However, according to the defendant, "I made mention of the fact too, that it would be more expensive and, therefore, between us we decided that I would do it."

The plaintiff presented the testimony of an expert tending to prove that it is customary for a general practitioner to refer the extraction of impacted lower bicuspids to an exodontist or oral surgeon. This expert was asked whether it is customary for a general practitioner of dentistry in Los Angeles to inform a patient prior to the extraction of a tooth such as a lower left second impacted bicuspid, that there may be a serious injury to the "mental" nerve and the possibility of a resulting numbness of his lip. The doctor replied, "I think any dentist in Los Angeles who does such an operation would inform the patient of the likelihood of the complication because it is a great likelihood that it would occur." An oral surgeon testifying as an expert on behalf of the defendant, however, said that it was customary and proper for general practitioners of dentistry in the locality, observing required standards of care, to extract impacted teeth. He gave several reasons why a dentist may refer his patient to a specialist, but he specifically stated that it was not the customary practice for a general practitioner to refer a person with a completely impacted left lower second bicuspid to an exodontist for extraction. As he put it, "many men do their own extractions. As I stated before, it all depends on how the man feels about his ability." The defendant's expert also told the jury that the danger of traumatization is present whether an exodontist or a general practitioner performs the extraction. Traumatization of the mandibular nerve, he said, occurs in approximately 25 per cent of extractions such as that performed by the defendant.

The defendant argued that the failure of a general practitioner to refer a patient to a specialist is not actionable in the absence of proof that, in the treatment of the patient, there was a failure to exercise the degree of skill and learning employed by specialists practicing in the same locality.

In discussing the instructions which were given by the trial court, the Supreme Court said that they failed to state that there is a duty to refer a patient to a specialist only if, under the same circumstances, a reasonably careful and skillful general practitioner would have done so. The general practitioner's duty must always be measured in relation to the facts in the particular case. In determining a course of action, he may and should consider such elements as the patient's mental and emotional condition, his known financial situation, and the many other variants which a physician meets in treating human ailments. However, continued the court, assuming that under the evidence, the defendant should have referred the plaintiff to a dental surgeon, there is an entire failure of proof that in extracting the tooth he did not use the skill and care of such a specialist. The question as to whether there was proper care in the treatment of a particular case is one to be determined by the opinions of experts and the failure to use such care can be established only by their testimony. Negligence on the part of a physician or surgeon will nc be presumed; it must be affirmatively proved. On the contrar in the absence of expert testimony, it will be presumed that physician or surgeon exercised the ordinary care and skill r quired of him in treating his patient.

In the record before us, the Supreme Court concluded, no e pert witness stated that anything done by the defendant const tuted improper treatment. Neither is there any evidence to sho that he did anything which a reasonably prudent and skillf oral surgeon would not have done. For all that appears, t plaintiff's tooth was extracted with the care and skill he woul have received at the hands of a specialist. Accordingly the jud ment in favor of the plaintiff was reversed. *Simone v. Sabo,* 2 *P. (2d) 19 (California 1951).*

MEDICAL MOTION PICTURES

The Exfoliative Cytologic Method in the Diagnosis of Gastric Canc 16 mm., color, sound, showing time 19 minutes. Prepared by Cornell U *versity Medical College and New York Hospital under the supervision* George N. Papanicolaou, M.D., and William A. Cooper, M.D. Produ in 1951 by and procurable on purchase from the American Cancer Soci 47 Beaver Street, New York 4, and on loan from state cancer societies.

The background of this cytological method is briefly show its present usefulness and disadvantages are indicated, and procedure is visually presented by live photography and styliz animated drawings. The method consists of insertion of a dou lumen tube through the mouth into the stomach. On the end the tube is tied a rubber balloon surrounded by a coarsely wov net, similar to a woman's veil. After the tube is inserted, balloon is distended with air and allowed to pass down to pylorus. It is then pulled back manually, and this process repeated several times. After the tube is removed, the clum of cells or fragments of tissue are picked off the knots of veil, and the veil itself is washed and the fluid centrifuged. T clumps of tissue and sediment are fixed, stained, and examin under a microscope. The authors report a very high inciden of accurate diagnosis in 100 cases studied. Since the x-ray di nosis is so inaccurate in differentiating benign gastric ulcer fr malignant gastric ulcer, this additional method in diagno should, at least, be given extensive trial. This picture is w planned and well organized. The photography, animation, a narration are excellent. It is recommended for clinicians deal with gastric lesions and also for students and interns, since th take an active part in preoperative diagnosis.

Uterine Cancer: The Problem of Early Diagnosis: 16 mm., color, sou *showing time 20 minutes. Sponsored by the American Cancer Society* the National Cancer Institute. Produced in 1951 by Audio Productic Inc., New York. Procurable on purchase from the American Can Society, 47 Beaver Street, New York, or on loan from state cancer so ties and state health departments.

The incidence of cancer of various sites in the female geni tract (International Classification) is given, with survival ra indicated for each. Symptomatology and aids in diagnosis visually presented in animated drawings for each stage of cervi cancer, including stage O. The role of cytology in early det tion is stressed, its technique visually described, and diagnos criteria illustrated. Dr. Papanicolaou sounds a note of cauti in using the method in diagnosis, by indicating that a posit smear should be confirmed as a matter of routine by biopsy a tissue diagnosis. The Schiller test and methods of biopsy included.

The film calls attention to the importance of a compl physical examination, bimanual examination, visual inspect of the cervix, rectal examination, and aspiration of the cul sac, together with this very simple method of securing c from the cervical canal. Several case reports are shown to ill trate these points. It is presented entirely from the standpo of early diagnosis of uterine malignancy. It does not includ discussion of treatment. The picture is well organized. T photography, animation, and narration are excellent, and film is highly recommended for the general practitioner, the vanced medical student, and hospital staff meetings.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

64:533-666 (Nov.) 1951

"Chemical" Analysis of Intact Skin by Reflectance Spectrophotometry. J. W. Goldzieher, I. S. Roberts, W. B. Rawls and M. A. Goldzieher. —p. 533.
*Cortisone and Corticotropin (ACTH) in Treatment of Scleroderma. R. R. Kierland and E. A. Hines Jr.—p. 549.
Physiological and Chemical Changes in Radiation Injuries. F. T. Jung. —p. 555.
Progesterone Therapy of Acne: Clinical Evaluation. H. M. Lewis, G. M. Frumess and E. J. Henschel.—p. 562.
Evaluation of Chloramphenicol in Treatment of Chronic Discoid Lupus Erythematosus. H. M. Robinson.—p. 565.
*Cortisone Acetate Administered Orally in Dermatologic Therapy M. B. Sulzberger, V. H. Witten and S. N. Yaffe.—p. 573.
Bismuth Putty in X-Ray Shielding: Efficiency of Material and Advances in Technique. J. W. Wilson and R. Luikart II.—p. 580.
Appraisal of Toxicity of Sunscreen Preparations. J. H. Draize.—p. 585.
Lichen Corneus Hypertrophicus (Lichen Ocreaformis, Lichen Obtusus): Analysis of Conditions with Which This is Confused. A. B. Hyman and B. D. Erger.—p. 588.
Antibiotic Sensitivity and Moniliasis. A. J. Reiches.—p. 604.
Podophyllotoxin Treatment of Microsporum Audouini Scalp Infections. C. J. Young.—p. 607.
Congenital Ichthyosiform Erythroderma: Report of Two Cases in Siblings, One Complicated by Kaposi's Varicelliform Eruption. W. C. Fitzgerald and A. P. Booker.—p. 611.
Lichen Sclerosus et Atrophicus and Related Disorders. C. W. Laymon. —p. 620.
Treatment of Urticaria and Dermatitis Venenata with Corticotropin (ACTH) and Cortisone. G. H. Ekblad.—p. 628.

Cortisone and Corticotropin in Scleroderma.—Four women between 21 and 36 with scleroderma were treated with cortisone. The drug was administered in doses of 50 mg. to 100 mg. daily for 7 to 37 days, the total dose varying from 700 mg. to 3,700 mg. Two patients were given four courses of treatment, one patient was given three courses, and one patient one course. All patients had pronounced improvement, especially in rheumatic manifestations, during and shortly after treatment. In three patients the symptoms reappeared within a few weeks after treatment had been discontinued, whereas in the fourth patient the remission was maintained for at least five months. In three patients treatment was repeated and appeared to bring about the same improvement in less time and with a smaller total dose than had been required in the preceding courses. Gradually decreasing doses followed by low maintenance doses may provide more lasting benefits. In one patient, who had received a total of 700 mg. of cortisone, measles with signs of encephalitis developed 24 hours after her third course of therapy. The acute symptoms led to the death of the patient. Acute extensive bronchopneumonia was revealed by necropsy, emphasizing that cortisone should not be administered to patients with acute infections. Of two other women with scleroderma treated with corticotropin (ACTH), one was given 80 mg. daily for 10 days, and the other 75 mg. daily for 16 days. There was no demonstrable objective or subjective improvement within six weeks after treatmtent. This may have been due to bad timing of administration of the hormone. In the authors' experience cortisone had the greatest clinical effect of any agent yet used in treatment of scleroderma, producing definite remission of symptoms for varying periods, yet it does not cure scleroderma.

Oral Cortisone Acetate in Dermatoses.—Thirty-two patients with various dermatoses, such as atopic dermatitis, dermatitis herpetiformis, urticaria, distinctive exudative discoid and lichenoid chronic dermatitis, and pemphigus vulgaris, were given cortisone acetate orally, the starting dose varying between 100 and 200 mg. per day. The dose was reduced as rapidly as each patient's response permitted, with the object of reaching the lowest effective dose as quickly as possible. The response of most patients to the drug was dramatic, with abatement of symptoms within 24 hours and substantial improvement of clinical signs within 24 to 48 hours. Changes in the daily dose were made most frequently by increments of 25 mg. per day, although occasionally larger or smaller increments were used. Adverse effects, possibly due to the drug, were noted in five patients as follows: moon face developed in two patients, one with hypertrichosis and a 20 lb. (9.1 kg.) gain in weight (both had received corticotropin [ACTH] previously); a third patient showed hyperpigmentation of the areas of skin usually exposed and not covered by clothing; and two other patients each complained of hyperexcitability and insomnia. All these undesirable effects diminished or disappeared after the dose was reduced or administration of cortisone was discontinued. The effectiveness of this new therapeutic approach in a wide variety of skin diseases was clearly demonstrated. No other method of treatment seems to have comparable beneficial effects. The authors emphasize that the benefits generally stop soon after cessation of treatment, unless spontaneous remissions occur. Disagreeable and sometimes dangerous effects still preclude the use of this treatment except in serious diseases, and when the patient can be kept under close and expert surveillance.

A.M.A. Arch. Otolaryngology, Chicago

54:467-608 (Nov.) 1951

Management of Deformities of Lower Cartilaginous Vault. S. Fomon, I. B. Goldman, H. Neivert and A. Schattner.—p. 467.
New Method of Plugging Eustachian Tube in Radical Mastoidectomy Using Polyethylene Prosthesis. S. O. Siemssen.—p. 473.
*Pathology of Bell's Palsy. A. Hall.—p. 475.
Face-Lift Operation by Rotation Flaps. S. Fomon, I. B. Goldman, H. Neivert and A. Schattner.—p. 478.
Bacteriologic and Epidemiologic Approach to Treatment of Sinorespiratory Infections: Series II. Observations on Efficacy of Antibiotics with Continued Use. S. J. Prigal, N. Molomut and A. Haber.—p. 493.
Cortisone in Behcet's Syndrome: Report on Patient with Lesions of Genitalia, Mouth, Pharynx, and Larynx Necessitating Repeated Tracheostomies. D. S. Kenet.—p. 505.
Spontaneous Intramaxillary Hemorrhage. C. H. LaClair Jr.—p. 510.
True Cholesteatoma of Temporal Bone. M. J. Tamari and A. E. Fogo. —p. 518.
Hemilaryngectomy—Modified Technique for Cordal Carcinoma with Extension Posteriorly. M. L. Som.—p. 524.
Special Kind of Acoustic Trauma Produced by Jet Engines. L. Rüedi and W. Furrer.—p. 534.
Sturge-Weber Disease as Otolaryngological Problem. R. J. McMahon. —p. 542.
Nasopharyngeal Fibroma Treated by Unusual Measures. G. H. Penha. —p. 547.
Calcified Cervical Node Masquerading as Foreign Body.. E. L. Manning. —p. 550.
Cricothyroid Subluxation. W. J. Loeb.—p. 553.
New Right-Angle Otoscope Facilitating Differential Diagnosis in Tympanic Pathology. S. H. Gidoll.—p. 554.
Technique in Use of Posterior Nasal Pack. C. B. Turnblacer.—p. 558.
Plastic Surgery During Years 1949 and 1950. L. A. Peer, J. C. Walker Jr. and F. A. Marzoni.—p. 560.

Pathology of Bell's Palsy.—Decompression of the facial nerve from the stylomastoid foramen to the lateral semicircular canal was recommended for persistent Bell's palsy by Ballance and Duel in 1932. Several other investigators have performed this operation. One of them, Kettel, has concluded that the ischemia near the stylomastoid foramen, which is considered the cause of Bell's palsy, in most cases affects the nerve only as the most susceptible tissue; in other cases, however, the surrounding more resistant bone is also [illegible], the result being an ischemic bony necrosis. In this pape [illegible] resents three cases of Bell's palsy in which resection [illegible] toid cell [illegible] pression of

---

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

the facial nerve were done. In all cases an exudate was found in the cells at the tip of the mastoid process and in one some larger cells contained a yellow serous fluid. The bone near the stylomastoid foramen was definitely soft and the facial nerve very edematous. These observations confirm those of Kettel and support his views on the pathological changes in Bell's palsy.

Antibiotic Treatment of Sinorespiratory Infections.—Prigal and Molomut earlier had described a method for selecting the most effective antibiotic in respiratory infections, including growth of a culture as well as in vitro inhibition tests. This report continues the earlier studies. Material was taken from patients with sinorespiratory infections for cultures in dextrose-phosphate broth. The material was incubated for four hours (during the lag phase of growth), and subcultured to differential mediums, blood plates and dextrose-phosphate broth, containing the various antibiotics. A total of 332 organisms were isolated from 174 cultures. Of these, 15 were isolated from the nose, 269 from the pharynx, and 9 from the eye or eyelid. Hemolytic staphylococci and streptococci predominated. A comparison of these and earlier results shows a greater incidence at present of organisms that are more resistant to the antibiotics. The in vitro actions of penicillin, bacitracin, streptomycin, aureomycin, and terramycin against these organisms were grouped into three categories: complete inhibition, no inhibition, and partial or temporary inhibition. Of the organisms isolated, 3.9% were not inhibited by any of the antibiotics. Other evidence also indicates a wide area of ineffectiveness of the five antibiotics against organisms cultured from sinorespiratory infections. Certain organisms showed a tendency toward familial occurrence. In one family a girl who had asthma due to allergic and infectious factors harbored a hemolytic Staphylococcus in the pharynx and on the eyelids (from blepharitis since early childhood). Two younger sisters harbored the same organism but were not ill, possibly because they had greater "immunity." It would seem logical to treat them although they are apparently well, not only for their sakes but also for the sake of their sister. Blepharitis was implicated as a focus of infection and reinfection in a number of other cases.

American Journal of Medical Sciences, Philadelphia

222:365-484 (Oct.) 1951

*Procaine Amide (Pronestyl) in Treatment of Cardiac Arrhythmias. J. M. Kinsman, W. R. Hansen and R. L. McClendon.—p. 365.
Hemodynamic Changes Following Procaine Amide Administered Intravenously. R. L. McClendon, W. R. Hansen and J. M. Kinsman. —p. 375.
Quinidine Treatment of Auricular Fibrillation. M. J. Goldman.—p. 382.
*Successful Use of ACTH in Treatment of Agranulocytosis Due to Sulfadiazine. J. S. McMillin.—p. 392.
Effect of Antibiotics (Penicillin, Aureomycin, and Terramycin) on Fatality Rate and Incidence of Complications in Pneumococcic Pneumonia: Comparison with Other Methods of Therapy. H. F. Dowling and M. H. Lepper.—p. 396.
*Studies on Antibiotic Synergism and Antagonism: Interference of Aureomycin, Chloramphenicol and Terramycin with Action of Streptomycin. E. Jawetz, J. B. Gunnison and R. S. Speck.—p. 404.
Aureomycin in Infectious Mononucleosis: Control Study. G. A. Cronk. —p. 413.
Correlation of Electrocardiographic and Pathologic Findings in Ring-Like Subendocardial Infarction of Left Ventricle. G. B. Myers, C. H. Sears and T. Hiratzka.—p. 417.
Serum Lipid Studies in Euthyroid Subjects Following Administration of Thyroid. A. Soffer, P. N. G. Yu, M. A. Epstein and E. S. Olsan. —p. 427.
Lipomicronemia in Mice Caused by Parenteral Administration of Fat. P. Ermala, L. R. Holsti and K. Setälä.—p. 436.
Serum Amylase Response to Pancreatic Stimulation as Test of Pancreatic Disease. T. S. Malinowski.—p. 440.
Typhoid Fever: Chloramphenicol Therapy and Problem of Relapse. W. V. Matteucci, N. H. Schimmel and W. P. Boger.—p. 446.
Extremity Blood Flow in Dog in Presence of Obstructive Arterial Clots. J. N. McClure Jr. and R. A. Murphy Jr.—p. 452.
Some Aspects of Adrenocortical Function in Cardiac Decompensation. E. M. Lasché, W. H. Perloff and T. M. Durant.—p. 459.
ACTH and Cortisone in Rhinolaryngology. N. D. Fabricant.—p. 468.
L. E. Cell and Phenomenon in Lupus Erythematosus. H. Beerman. —p. 473.

Procaine Amide in Cardiac Arrhythmias.—Kinsman and associates gave procaine amide ("pronestyl") intravenously to 41 patients, who had a total of 51 arrhythmias, and to 11 patients with normal sinus rhythm. Several patients with arrhythmias had both auricular fibrillation and ectopic ventricular contractions. In general, arrhythmias of supraventricular origin were not influenced by the drug, except auricular ectopic contractions and recent (paroxysmal) auricular fibrillation. Ventricular ectopic contractions were abolished in 12 of 14 instances. Ventricular tachycardia was abruptly stopped in two of four patients; the remaining two died, one being moribund when the drug was administered, while the death of the other may have been either due to the drug or in spite of it, and conceivably might have been averted by a larger dose administered more rapidly. Subjective toxic effects were rare, but objective toxic effects such as a fall in peripheral blood pressure and pulmonary arterial pressure, decrease in cardiac output, and increase in circulation time and intraventricular conduction times were the rule. No serious toxic effects were observed, except possibly in one of the two fatal cases of ventricular tachycardia. The authors conclude that the intravenous administration of procaine amide should be reserved chiefly for patients with paroxysmal rapid heart action who are in immediate danger of death, or in whom the oral administration of procaine amide or other measures have failed, and for patients under anethesia.

Corticotropin Treatment of Agranulocytosis.—In the case reported here agranulocytosis due to toxic depression of the bone marrow was produced by a sensitivity reaction to sulfadiazine administered for cystitis and pneumonia. On Dec. 12, 1950, a routine white blood count, which previously had ranged from 7,200 to 13,200, was found to be 2,900 per cubic millimeter with 39% neutrophils, 60% lymphocytes, and 1% monocytes. During the next six days the patient's white count steadily fell to a low of 450 cells, all of which were lymphocytes. At this time the patient had chills, temperature elevation to 105 F, rapid and shallow respirations, cyanosis of the lips and nail beds, and a gallop rhythm. His death appeared imminent. A sternal marrow study showed an almost complete arrest of maturation of the myeloid cells. Beginning December 19, 25 mg. of corticotropin (ACTH) was given every six hours for three days. Then the dose was gradually decreased, a total of 500 mg. being given in seven days. Within 24 hours after corticotropin was started the patient felt much better. After 72 hours the temperature had returned to normal, and the patient was asymptomatic. A bone marrow study two days after corticotropin therapy was begun showed a great change, and a third marrow examination eight days later revealed granulopoietic activity without maturation defect. Fifty days after the onset of agranulocytosis and 31 days after treatment with corticotropin, the peripheral blood was still normal.

Interference of Aureomycin, Chloramphenicol, and Terramycin with Streptomycin.—An editorial in the *British Medical Journal* on antibiotic synergism and antagonism suggested that it might be "a general principle not to combine a bacteriostatic with a bactericidal agent of the penicillin type." This study on antibiotic action in vitro and in experimental infections in mice demonstrates that either of the two bacteriostatic drugs (aureomycin and chloramphenicol) interferes with the action of either of the bactericidal drugs (penicillin and streptomycin). The magnitude of antagonism to streptomycin is somewhat less than to penicillin, particularly in multiple dose experiments in a streptococcal infection in mice. Thus penicillin, streptomycin, and perhaps bacitracin belong in one group; aureomycin, chloramphenicol, and terramycin in a second group. Drugs of the second group may all, though not to the same degree, interfere with the action of drugs in the first group. The agents of the first group appear to be synergistic with each other, and to be capable of overcoming the interference by the drugs of the second group. The interference of aureomycin, chloramphenicol, and terramycin with the action of streptomycin is a unilateral phenomenon. Such interference may therefore be observed only if the infecting micro-organism is susceptible to streptomycin. If the bacterium is resistant to streptomycin to begin with, no interference can be observed. On the contrary, with a resistant organism true synergism, with a marked increase in early bactericidal rate, may be demonstrated between streptomycin and, for example, terramycin. A patient illustrating such a problem and cured by this drug combination has been observed. The authors feel that a drug antagonism that can be demonstrated only under highly selected circumstances in experimental infections is unlikely to be important clinically, including the interference of aureomycin and terramycin with the action of streptomycin. Whether the antagonism of chloramphenicol to streptomycin is of sufficient magnitude to cause concern must be determined by further experimentation and clinical experience.

American Journal of Physiology, Baltimore

166:493-742 (Sept.) 1951. **Partial Index**

Effect of Cortisone upon Work Output of Adrenalectomized Rat. D. J. Ingle, J. E. Nezamis and E. H. Morley.—p. 504.

Effects of Cortisone on Mechanism of Increased Capillary Permeability to Trypan Blue in Inflammation. V. Menkin.—p. 509.

Effects of ACTH on Mechanism of Increased Capillary Permeability to Trypan Blue in Inflammation. V. Menkin.—p. 518.

Circulating Leukocytes in Sodium Chloride Deficient Rats and Their Response to Epinephrine, ACTH, Cortisone and Desoxycorticosterone Acetate. H. G. Danford and P. A. Danford.—p. 524.

Effects of Caloric Restriction, Salt Restriction and Role of Pituitary and Adrenal Glands in Experimental Renal Hypertension. P. Handler and F. Bernheim.—p. 528.

Impaired Water Metabolism in Pyridoxine Deficiency and Effects of Pyridoxine and Adrenal Cortical Hormone. R. B. Stebbins.—p. 538.

Utilization of Antithyroid Action Test for Bioassay of Thymus Hormone. J. Comsa.—p. 550.

Effects of Hormone, Vitamin and Liver Supplements on Appetite and Growth of Young Rat During Recovery from Chronic Starvation. F. H. Quimby.—p. 566.

Effect of Aureomycin upon Blood Coagulation Time, Ac-Globulin and Prothrombin Activity. I. Innerfield, A. Angrist, J. W. Benjamin and L. A. Kanegis.—p. 578.

Blood Volume Changes in Protracted Shock Resulting from Experimental Myocardial Infarction. C. M. Agress, M. J. Rosenberg, M. J. Binder and others.—p. 603.

Alterations in Renal Hemodynamics and Function During Intravenous Injection of Epinephrine in Dog. C. R. Houck.—p. 649.

Effect of Sympathectomy on Gastric Secretion in Total Pouch Dogs. H. A. Oberhelman Jr., E. R. Woodward, C. A. Smith and L. R. Dragstedt.—p. 679.

Effect of Parasympathetic Denervation on Feline Bladder Function. F. G. Carpenter and W. S. Root.—p. 686.

Vomiting Center: Its Destruction by Radon Implantation in Dog Medulla Oblongata. S. C. Wang and H. L. Borison.—p. 712.

Effect of Diphenyl Hydantoin (Dilantin) on Ether and Pentobarbital (Nembutal) Narcosis. A. van Harreveld, R. J. Foster and G. D. Fasman.—p. 718.

167:1-288 (Oct.) 1951. **Partial Index**

Filtration, Diffusion and Molecular Sieving Through Peripheral Capillary Membranes: Contribution to Pore Theory of Capillary Permeability. J. R. Pappenheimer, E. M. Renkin and L. M. Borrero.—p. 13.

Formation of Cyanide in Dog and Man Following Administration of Thiocyanate. F. Goldstein and F. Rieders.—p. 47.

Failure to Produce Polycythemia in Man, Dog and Rabbit by Daily Administration of Ephedrine Sulfate. R. F. Schilling.—p. 59.

Influence of Intraventricular Catheters on Course of Immersion Hypothermia in Dog. A. H. Hegnauer, H. D'Amato and J. Flynn.—p. 63.

Factors Concerned in Electrical Defibrillation of Heart, Particularly Through Unopened Chest. A. C. Guyton and J. Satterfield.—p. 81.

Vulnerability to Fibrillation and Ventricular-Excitability Curve. B. F. Hoffman, E. F. Gorin, F. S. Wax and others.—p. 88.

Some Effects of Dehydroascorbic Acid on Central Nervous System. J. W. Patterson and D. W. Mastin.—p. 119.

Effect of Administration of Relatively Large Amounts of Insulin on Growth of Islets of Langerhans. M. A. Evans and R. E. Haist.—p. 176.

Effect of Eck Fistula Formation on Alloxan Diabetic Dogs. S. Koide and S. Freeman.—p. 193.

Renal Function Related to Acutely and Chronically Raised Intra-Abdominal Pressure in Anesthetized and Unanesthetized Dogs. D. M. French, P. A. Molano and W. M. Booker.—p. 241.

Protein Binding of p-Aminohippurate in Human and Dog Plasma. J. V. Taggart.—p. 248.

American Journal of Public Health, New York

41:1209-1332 (Oct.) 1951. **Partial Index**

Vaccination Against Tuberculosis with Freeze-Dried BCG Vaccine. F. van Deinse.—p. 1209.

Paralytic Consequences of Poliomyelitis Infection in Different Parts of World and in Different Population Groups. A. B. Sabin.—p. 1215.

Atmospheric Conditions and Spread of Poliomyelitis. C. Armstrong. —p. 1231.

Criteria of Immunity and Susceptibility to Mumps in Young Adults. R. E. Wheeler and A. S. Benenson.—p. 1238.

Method for Delayed Cultural Identification of Neisseria Gonorrhoeae. A. C. Sanders and R. L. Hullinghorst.—p. 1240.

Staff Development Program in Human Relationships for Venereal Disease Control Workers. B. Safier and H. G. Corrigan.—p. 1244.

Mental Health in a Chest Clinic. H. Bauer.—p. 1251.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

66:521-700 (Oct.) 1951

Radiological Achievement 1937-1950: Advances in Clinical Radiotherapy. R. Paterson.—p. 521.

*Roentgenological and Pathological Observations in Antigenic Pneumonitis: Its Relationship to Collagen Diseases. L. R. Sante and J. P. Wyatt. —p. 527.

Roentgenologic Manifestations of Amebiasis of Liver with Concomitant Findings in the Chest. S. Schorr and A. Schwartz.—p. 546.

*Intra-Arterial Catheterization of Viscera in Man. H. R. Bierman, E. R. Miller, R. L. Byron Jr. and others.—p. 555.

Carcinoid of Duodenum. J. R. Hannan, J. B. Hazard and R. E. Wise. —p. 569.

Subperiosteal Resorption of Bone: Roentgenologic Manifestation of Primary Hyperparathyroidism and Renal Osteodystrophy. D. G. Pugh. —p. 577.

Roentgen Appearance of Early Paget's Disease. W. B. Seaman.—p. 587.

Case of Generalized Osteosclerosis. J. Hinge and P. Menck-Thygesen. —p. 595.

Gastroileostomy: Case Report. C. L. Boice.—p. 601.

*Value of Ventriculo-Encephalography in Planning Roentgen Therapy for Brain Tumors. E. P. Pendergrass and J. M. Phillips.—p. 603.

Two Million Volt Roentgen Therapy Using Rotation. J. G. Trump, K. A. Wright, H. F. Hare and S. W. Lippincott Jr.—p. 613.

Application of Radioactive Colloidal Gold in Treatment of Pelvic Cancer. A. I. Sherman, M. Bonebrake and W. M. Allen.—p. 624.

Antigenic Pneumonitis and Collagen Diseases.—The roentgenological and pathological aspects of collagen diseases were studied in an effort to throw light on the nature of these diseases. Observation seems to indicate that derangement of the intercellular collagenous substance may be an important factor in their development. These conditions with widely divergent clinical manifestations seem to have little to suggest a common etiology, but an associated pathological pulmonary reaction, which exists in all, might be a common denominator. Hypersensitive states such as serum reaction, drug sensitization, blood incompatability in transfusions, acute glomerulonephritis (with azotemic edema), periarteritis nodosa, rheumatic pneumonitis (in which transitory joint involvement is a prominent feature), rheumatoid arthritis, disseminated lupus erythematosus, dermatomyositis, and scleroderma are the collagen diseases discussed by the authors. They stress that pathological examination of the lungs reveals a striking similarity in most of the collagen diseases. Roentgenologically, the collagen diseases seem to be divided into two major groups: (a) those in which there is an acute antigenic response, associated with glomerulonephritis and antigenic (azotemic) pulmonary edema; (b) those in which there is no indication of lung reaction up to the terminal stages of the disease. At this time, pulmonary edema may occur, but it is never of the azotemic type, and irregular collagenous deposits are present throughout the lung. Roentgenologic examination helps in differentiating these two groups. The involvement of connective tissue in all of these diseases does not preclude the possibility of a number of etiological agents with consequent variation in response of the tissues. It may be found that such agents also include various bacterial and virus toxins that may, depending on the conditions present in the body, produce a wide variety of manifestations.

Intra-Arterial Catheterization of Viscera.—If an artery leading to an organ could be isolated, not only could the organ be visualized roentgenographically, but chemotherapeutic agents in high concentration could be administered directly to neoplastic lesions involving this organ. Furthermore, such an isolation of the arterial supply of an organ in vivo would make possible pharmacologic and physiological studies. A surgeon, radiologist, internist, and anesthetist together explored the feasibility of intra-arterial catheterization of viscera. Radiopaque, intracardiac catheters were used. The technique was first tried on cadavers and, after satisfactory skill had been achieved, 28 arterial catheterizations were performed on 24 patients with metastases from neoplastic diseases. The procedure, its hazards, risk, and experimental nature were explained to each patient, and agreement was obtained in all cases. In adults the procedure was carried out under local procaine anesthesia. A general anesthetic was administered to three children. The celiac axis, hepatic, renal, phrenic, lumbar, superior and inferior mesenteric, and iliac arteries were entered by means of an intra-arterial catheter introduced from the carotid and brachial arteries. The carotid, subclavian, internal mammary, vertebral, and thyrocervical trunk arteries were catheterized by way of the femoral arteries. The arterial patterns of the liver, spleen, stomach, kidney, and diaphragm were visualized roentgenographically. While four serious complications in 24 patients is a high incidence, it is not prohibitively high considering that it was an initial effort mostly performed in patients with far advanced neoplastic illnesses. Since the complications noted seem avoidable, this procedure appears to have some value for the purpose stated.

Arizona Medicine, Phoenix

8:1-80 (Oct.) 1951

Nodular Tuberculosis of Lung. J. S. Chapman.—p. 21.
Partial Pulmonectomy. D. W. Melick.—p. 24.
Some Problems of Intestinal Obstruction. C. J. Baumgartner.—p. 26.
*Laryngeal Vertigo with Report of Two Cases. L. E. Beaton.—p. 30.

Laryngeal Vertigo.—In laryngeal vertigo, known also as laryngeal epilepsy and tussive syncope, unconsciousness, with or without convulsions, follows coughing. The syndrome is not widely recognized by physicians. It occurs in obese men of middle age, who are often hypertensive and emphysematous and have chronic laryngitis or bronchitis. Many use tobacco excessively. The cough that precedes the fainting or seizure is oftenest strong and paroxysmal. The two cases reported here occurred in obese males aged 51 and 67, respectively. The authors feel that the most probable reason for the fainting is that in coughing the patient performs the Valsalva maneuver of forced expiration against a closed glottis, increasing intrathoracic pressure, causing venous congestion of the head, lowering cardiac output, and bringing about cerebral anoxia. The term tussive syncope, as suggested by McCann and his co-workers, seems most logical, for the symptoms have nothing to do with the larynx, vertigo is not present, and epilepsy occurs rarely and then only as a complication in predisposed persons. The two cases here reported are examples of the syndrome with and without convulsions. When grand mal attacks occur during the syncopal episode, it seems likely that the patient has a latent cerebral dysrhythmia. Therapy is symptomatic, aiming at the cause of the cough. In cases with an epileptic compotent, anticonvulsants should be prescribed.

Bulletin of Johns Hopkins Hospital, Baltimore

89:339-418 (Nov.) 1951

Diagnosis of Carcinoma of Pituitary Gland. A. B. King.—p. 339.
Nerve Endings, Neurosecretory Substance and Lobular Organization of Neurohypophysis. D. Bodian.—p. 354.
Changes in Blood Volume Following Operation for Pulmonic Stenosis: Studies with Evans Blue and Radioactive Phosphorus. R. C. Clay, S. R. Elliott II and H. W. Scott Jr.—p. 377.
Cerebral Lesions in Congenital Heart Disease: Review of Autopsies on 162 Cases. M. Berthrong and D. C. Sabiston Jr.—p. 384.
Efficacy of Aureomycin in Treatment of Pneumococcal Lobar Pneumonia. R. Austrian, J. Barondess, G. S. Mirick and others.—p. 407.

Cancer Research, Chicago

11:741-820 (Oct.) 1951. **Partial Index**

Gastric Absorption of 3,4-Benzpyrene: I. Effect of Physiological Processes on Absorption. P. Ermala, K. Setälä and P. Ekwall.—p. 753.
Effect of Tumor Growth on Liver Catalase Concentration. O. A. Klatt and A. Taylor.—p. 764.
Effect of Tumor Implants on Chick Embryo Liver Catalase Activity. E. R. Skavinski and A. M. Stein.—p. 768.
Phosphorus Metabolism in Resting and Pregnancy-Stimulated Mammary Glands and in Spontaneous Mammary Carcinomas of Mice. S. Albert, R. M. Johnson and M. S. Cohan.—p. 772.
Comparison of Nitrogen Content of Lymph Nodes from Cancer and Noncancer Patients. J. C. Bateman, C. T. Klopp and A. Mendelson.—p. 777.
Distribution of Radioactivity in Tissues of Mice Receiving Triphenylbromoethylene-Br^{82}. G. H. Twombly, E. F. Schoenewaldt and D. Meisel.—p. 780.
Studies on Metabolism, Distribution, and Excretion of 2-*p*-Toluenesulfonamido-fluorene-S^{35} in the Rat. F. E. Ray and M. F. Argus.—p. 783.
Rous Sarcoma in Folic Acid-Deficient Chicks: Morphology and Bioassay. E. Woll, A. C. Dornbush and P. A. Little.—p. 788.
Tracer Studies on Metabolism of Gardner Lymphosarcoma: IV. Conversion of Lactate-2-C^{14} to Alanine, Glutamate, and Aspartate by Tumor and Spleen Cells. S. Kit and D. M. Greenberg.—p. 791.
Effects of Low Temperatures on Mammary Carcinomas With and Without Mammary Tumor Milk Agent. L. W. Law.—p. 795.
Significance of Anterior Chamber in Tumor Transplantation: II. Nature of Tumor Growth Beyond Anterior Chamber. E. J. Eichwald and H. Y. Chang.—p. 811.

Delaware State Medical Journal, Wilmington

23:261-294 (Sept.) 1951

Mortality Registration Problems. F. I. Hudson.—p. 263.
Medical Aspects of Civilian Defense. E. F. Gliwa.—p. 264.
Nursing Participation in Delaware's Civil Defense Program. M. Klaes.—p. 265.
Hospital Survey and Construction Program in Delaware. C. P. Knig —p. 266.
Diagnosis of Congenital Syphilis. W. L. Porter.—p. 268.
Cancer Program of the State Board of Health: Report No. 5. G. Campana and W. H. Bandy.—p. 270.
We Live Longer. C. A. Marshall.—p. 272.
Stream Morbidity Report. A. J. Kaplovsky.—p. 273.
Fluoridation of Public Water Supplies. M. H. Jeffreys and D. Harmeson.—p. 274.
Program of the Division of Crippled Children's Services. J. Sabl —p. 276.

23:295-322 (Oct.) 1951

Impressions After 33 Years in Medical Practice. C. E. Wagner.—p.
Surgical Treatment of Ulcerative Colitis. L. K. Ferguson.—p. 297.
Gallstone Ileus: Observations Based on Three Recent Cases. J. C. Pie and E. A. Mekanik.—p. 304.
Bronchial Adenoma. J. W. Abbiss.—p. 308.
Pelvic Evisceration with Construction of New Bladder in One St Case Report. H. S. Rafal.—p. 310.
Nodular Goiter with Bilateral Malignant Adenomata in a 19-Year Male. E. A. Mekanik and D. A. Baltz.—p. 314.

Georgia Medical Association Journal, Atlanta

40:405-442 (Oct.) 1951

*Culdoscopy, a Versatile Diagnostic Aid. J. H. Ridley.—p. 410.
Incidence of Carcinoma in Nodular Thyroids in Southwest Geo C. H. Watt and J. C. Foushee.—p. 414.
Adrenal Cortex and Allergic Reactions. W. F. Friedewald and C Laws.—p. 418.
Cortisone and Adreno-Genital Syndrome. P. L. Scardino and C Prince.—p. 419.
Medical Education and Medical Care: Divergence of Opinion of Me Faculties and Practitioners. R. H. Wood.—p. 422.

Culdoscopy.—Culdoscopy is one of the more recent form endoscopy; its predecessor was peritoneoscopy, which was fairly successfully for intra-abdominal visualization, but for vic inspection the peritoneoscope had only limited value. chief difference between the peritoneoscope and the culdos is that the former is introduced through an incision in the ante abdominal wall, while the latter is passed into the cul-de through a trochar puncture in the posterior vaginal fornix. Il trated descriptions are given of the culdoscope apparatus an the procedure of culdoscopy. The patient is anesthetized, ca terized, and examined in the dorsolithotomy position to se there is any physical contraindication to the cul-de-sac punct such as an adherent mass or extensive adhesions, and to de additional pathologic conditions that may contraindicate cu scopy and indicate immediate laparotomy. A table lists the culdoscopic examinations done over the period of 27 mo at an Atlanta hospital. In 21 of the patients culdoscopy was for suspected ectopic pregnancy. It permitted verification of diagnosis in 8 of these 21 cases, and this diagnosis was ruled in the remaining 13 cases, thus demonstrating the value of culdoscope in avoiding a major surgical procedure for diagn purposes. Ovarian enlargements of borderline size were inspe in five cases. In four of these the enlargements were found t due to follicular cysts, obviating the need for immediate surg because so frequently these cysts shrink in size. The appear of the other ovarian tumor on culdoscopy suggested a dern cyst. This was substantiated by laparotomy. Suspected tube lous peritonitis in a 13-year-old girl was proven by culdosc she was given dihydrostreptomycin. The culdoscope prove be of value in studies on the cause of sterility in six pati Culdoscopy caused no accidents. All patients who did not quire laparotomy were allowed to go home the following Culdoscopy is a safe and simple procedure, and, in the g majority of cases, it gives the desired information.

Hawaii Medical Journal, Honolulu

11:1-62 (Sept.-Oct.) 1951

Evaluation of Zinc Sulfate Turbidity Test in Hepatobiliary Disease. I Anderson and W. H. Civin.—p. 17.
Antidotes for Destruction. F. J. Halford.—p. 19.
Incidence of Dental Caries Among School Children in Hawaii. I Fanning.—p. 22.

Journal of Aviation Medicine, St. Paul

22:339-438 (Oct.) 1951

Where Does Space Begin? Functional Concept of Boundaries Between Atmosphere and Space. H. Strughold, H. Haber, K. Buettner and F. Haber.—p. 342.
*Gamma Radiation from Instruments in Aircraft. A. Morrison.—p. 350.
Diurnal Intensity Variation of Heavy Primaries of Cosmic Radiation and Its Consequences for Hazard to Health in Flight at Extreme Altitudes. H. J. Schaefer.—p. 351.
Requirements for Protection Against Thermal Hazards of High Speed Flight. D. Lindes.—p. 358.
Stimulus Required to Produce Motion Sickness: I. Preliminary Report Dealing with Importance of Head Movements. W. H. Johnson, R. A. Stubbs, G. F. Kelk and W. R. Franks.—p. 365.
Comparative Analysis of Airborne Acceleration Laboratory Versus Human Centrifuge. C. F. Gell.—p. 375.
Effects of Time and Temperature upon Tolerance to Positive Acceleration. E. E. Martin and J. P. Henry.—p. 382.
Radial Acceleration and Urinary Output of Supinated Man. F. R. Stauffer.—p. 391.
High Altitude Bailouts. V. Mazza.—p. 403.
Navy Program for Aircraft Escape. R. L. Christy Jr.—p. 408.
Problems of In-Flight Feeding for Fighter Pilot. W. E. Bills.—p. 418.

Gamma Radiation from Instruments in Aircraft.—Measurements were made of the gamma radiation that originates in the radium incorporated into the paint on the figures and pointers of the instruments of a "Constellation" aircraft. The instrument used was a Geiger counter radiation meter having scales of 20, 2, and 0.2 milliroentgens per hour. Measurements were made in the entrance walkway beside the engineer's station, and in the positions occupied in flight by the pilot, co-pilot, and engineer. The cosmic ray background in the cabin, well away from instrument panels, was also measured. It was found that the radiation levels are only slight percentages of those regarded as safe. As a further check, pocket ionization chambers were carried by one crew on a trans-Atlantic flight. The actual readings and the readings to be expected from the previously measured gamma radiation from the instruments agreed fairly well. The intensity of cosmic radiation, even at high altitudes, is much less than that of the gamma radiation from the luminous radium paint on the instruments and the combined effect of both is far below the point at which any concern need be felt.

Journal of Experimental Medicine, New York

94:359-454 (Nov.) 1951

Absence of Prosthetic Group in Type-Specific Polysaccharide of Pneumococcus. M. Heidelberger, C. M. MacLeod, H. Markowitz and M. M. DiLapi.—p. 359.
Electrophoretic Study of Streptococcal Proteinase and Its Precursor. T. Shedlovsky and S. D. Elliott.—p. 363.
Cytochemical Studies on Kidney: I. Role of Cell Multiplication in Normal Growth. N. B. Kurnick.—p. 373.
Studies on Endemic Pneumonia of Albino Rat: IV. Development of Rat Colony Free from Respiratory Infections. N. B. Nelson.—p. 377.
Effect of Chemical and Physical Agents on Phage Receptor of Phase II Shigella Sonnei. G. T. Barry and W. F. Goebel.—p. 387.
Studies on Psittacosis-Lymphogranuloma Group: I. Pattern of Multiplication of Meningopneumonitis Virus in Allantois of Chick Embryo. M. M. Sigel, A. J. Girardi and E. G. Allen.—p. 401.
Effect of Adrenocorticotropic Hormone on Inflammation Due to Tuberculin Hypersensitivity and Turpentine and on Circulating Antibody Levels. C. K. Osgood and C. B. Favour.—p. 415.
Dominant Role of Liver in Plasma Protein Synthesis: Direct Study of Isolated Perfused Rat Liver with Aid of Lysine-ϵ-C^{14}. L. L. Miller, C. G. Bly, M. L. Watson and W. F. Bale.—p. 431.

Journal of Investigative Dermatology, Baltimore

17:177-254 (Oct.) 1951

Acquired Contact Sensitivity to Chloromycetin. H. M. Robinson Jr., I. Zeligman, A. Shapiro and M. M. Cohen.—p. 205.
Prantal in Treatment of Hyperhidrosis. L. M. Nelson.—p. 207.
Eosinophilic Inclusion Bodies and Cytoplasmic Masses in Verrucae: Their Incidence in 156 Lesions Consecutively Removed. M. J. Strauss, H. Bunting and J. L. Melnick.—p. 209.
Estimation of Rate of Secretion of Sebum in Man. K. K. Jones, M. C. Spencer and S. A. Sanchez.—p. 213.
Allergic Reactivity to Simple Aliphatic Acids in Man. A. J. Weil and H. E. Rogers.—p. 227.
Studies in Sensitization to Halogenated Hydroxyquinolines and Related Compounds. W. Leifer and K. Steiner.—p. 233.
Studies on Sweating: IV. New Quantitative Method of Assaying Sweat-Delivery to Circumscribed Areas of Skin Surface. F. Herrmann, P. H. Prose and M. B. Sulzberger.—p. 241.
Preparation of Skin Powder and Skin Extracts. A. B. Lerner.—p. 251.

Journal-Lancet, Minneapolis

71:419-468 (Oct.) 1951

Surgical Treatment of Constrictive Pericarditis: Clinical and Experimental Observations. E. Holman.—p. 420.
Major Cardiac Arrhythmias of Apparent Psychogenic Origin Observed in Young Adults. J. R. Fox and C. A. McKinley.—p. 425.
*Vena Cava Ligation in Thromboembolic Disease. F. M. Owens Jr.—p. 435.
Multiple Chest Leads in Clinical Electrocardiography. R. Berman.—p. 439.
Massive Thrombus of Left Auricle: Case Report. J. F. Briggs and J. Bellomo.—p. 443.
Physiological Tests in Cardiovascular Pulmonary Disease. R. J. Bing and D. Carroll.—p. 444.
Comparative Susceptibility to Endocarditis and Glomerulonephritis in Dogs With and Without Arteriovenous Shunts. J. R. R. Bobb, J. D. M. Wargo and M. B. Visscher.—p. 455.

Vena Cava Ligation in Thromboembolic Disease.—Considerable enthusiasm has developed for vein ligation in prevention of pulmonary embolism in patients with thrombophlebitis. Initially ligation of the superficial femoral vein was done, then as the procedure was found to afford incomplete protection, common femoral ligation or external iliac ligation was carried out. Now it is found that ligation of the inferior vena cava affords complete protection against embolization from the legs and pelvis. Owens says that at his hospital phlebothrombosis and thrombophlebitis are usually treated with anticoagulants, but in selected instances vena cava ligation is used. The following are regarded as indications for vena cava ligation: (1) repeated embolism in patients who cannot be maintained on anticoagulants; (2) embolization in patients requiring further surgery; (3) septic embolization. Vena cava ligation is done through a transverse right abdominal incision using a retroperitoneal approach as for lumbar sympathectomy. The cava is freed from the aorta and lumbar vertebras and doubly ligated with cotton. Ligation is done just above the iliac vein junction. Within 12 hours after operation anticoagulants are administered to prevent thrombotic obliteration of the collateral venous channels. In the immediate postoperative period the patient's legs are elevated and wrapped to the groin with an elastic bandage. After a week the legs are allowed to dangle and in 10 days the patient may begin to walk. The authors employed this method of vena cava ligation in 11 patients, and no embolization has occurred after this operation. Two of these patients had previously had pulmonary emboli following ligation of leg veins. There has been no operative mortality, and all patients are alive at present. It is felt that fatal pulmonary emboli have been prevented in these persons by vena cava ligation. Sequelae were mild and resulted not from cava ligation but from the thrombophlebitis of the veins. The procedure has definite value in treatment of thromboembolic disease.

Journal of the Mount Sinai Hospital, New York

18:141-194 (Sept.-Oct.) 1951

Cardiac Resuscitation. J. Johnson and C. K. Kirby.—p. 141.
Correlation of Spatial Vectorcardiography with Intracardiac and Esophageal Leads. L. Scherlis and A. Grishman.—p. 149.
Causes of Death After Operation: Comparison Between the Last Decade and the 1920s. A. H. Aufses and H. Neuhof.—p. 166.
Vasomotor Response in Hysteria. S. R. Rosen.—p. 179.

Journal of Nervous and Mental Disease, New York

114:283-376 (Oct.) 1951

Element of Psychotherapy in Treatment of Organic Neurologic Disorders. L. Alexander.—p. 283.
Adrenergic and Cholinergic Properties of Blood: Investigation of Blood of Psychiatric Patients. J. A. Ritchie.—p. 307.
Philippe Pineal (1745-1826). His Views on Human Nature and Disease. His Medical Thought. W. Riese.—p. 313.
Herniation of Brain Through Ear with Recovery. A. S. Effron, F. Kennedy and E. Wladkowski.—p. 324.
Polyneuritis Following Cutaneous Diphtheria. J. A. Di Fiore.—p. 333.
Insulin Induced Transient Hemiplegia in Diabetes Mellitus: Electroencephalographic Studies. F. Robinson, M. P. Margules-Lavergne and J. G. Chusid.—p. 340.
*Bell's Palsy Treated with Cortisone. H. H. Rothendler.—p. 346.

Cortisone in Bell's Palsy.—The cause of Bell's palsy (peripheral seventh nerve paralysis) has never been satisfactorily determined, but it often follows exposure to cold and inclement weather and at times is associated with upper respiratory infections. An acute inflammatory reaction with congestion of the nerve and its sheath affects particularly that part of the nerve passing through the dense bony portion between the horizontal canal of the labyrinth and the stylomastoid foramen. Presumably edema of the nerve sheath so compresses the nerve fibers as to interfere with their function. The course of the paralysis is usually benign, except when injury to the nerve fibers has been prolonged so as to prevent regeneration. Since cortisone has relieved certain nonspecific congestive changes, it seemed logical to try it in treatment of Bell's palsy. In the patient whose case is presented all facial muscles on the left side were flaccid, and there was complete inability to exercise any facial motion. The left lower lid was completely everted and marked lacrimation was evident. The left corner of the mouth showed drooping with drooling of fluids. The patient was given 100 mg. of cortisone every six hours. Forty-eight hours later the patient volunteered the information that she was regaining control of her facial muscles. She showed less lacrimation and less drooling. The following day there was further improvement. On the fifth and sixth days the dosage of cortisone was decreased to 100 mg. every eight hours. Improvement was noted daily and on the seventh day muscular control was completely recovered. The dosage of cortisone was decreased to 100 mg. daily and continued for six days thereafter. She was discharged on the 13th day with no evidence of residual paralysis. It is hoped that this report will stimulate others to use cortisone in Bell's palsy, so that its true value in this condition can be learned.

Journal of Urology, Baltimore

66:477-618 (Oct.) 1951. **Partial Index**

Adrenal Cortical Carcinoma in Children. R. A. Garrett.—p. 477.
Surgical Conservation of Renal Parenchyma. R. B. Roth, E. Hess and A. F. Kaminsky.—p. 489.
Renal Roentgenoscopy and Roentgenography During Surgery. R. J. Prentiss and R. B. Mullenix.—p. 495.
Surgical Resection of Tuberculous Kidney. J. R. Rinker.—p. 498.
*Total Infarction of Kidneys from Bilateral Arterial Emboli. T. F. Kaiser and R. R. Ross.—p. 500.
Renal Hamartoma. C. A. Hulse and E. E. Palik.—p. 506.
Thrombin in Treatment of Hematuria of Renal Origin. E. O. Nay and R. R. Brown.—p. 516.
Attainment of Equilibrium Between Plasma and Urine, with Reference to Measurement of Renal Clearances. A. J. Michie and C. R. Michie.—p. 518.
*Dissolution of Urinary Calculi: Experiments with Ethylene Diamine Tetra-Acetic Acid With and Without "Wetting Agent." H. I. Suby, F. Albright, J. Wayne and E. Dempsey.—p. 527.
Unusual Renal Tumors. T. D. Moore.—p. 533.
Simultaneous Wilms Tumors in Identical Twins. E. Gaulin.—p. 547.
Squamous Cell Carcinoma of Renal Pelvis. O. J. Oberkircher, W. J. Staubitz and M. S. Blick.—p. 551.
Ureteral Implantation of Renal Adenocarcinoma. R. D. Howell.—p. 561.
*Evaluation of Ureterosigmoid Anastomosis by Mucosa-to-Mucosa Method After Two and One-Half Years' Experience. J. J. Cordonnier and W. J. Lage.—p. 565.
Strangulated Internal Hernia as Complication of Uretero-Intestinal Anastomosis. T. H. Sweetser.—p. 571.
Vesicovaginal Fistula from Standpoint of the Urologist. V. J. O'Conor and J. K. Sokol.—p. 579.
Operation for Cure of Urinary Incontinence in the Male. C. J. Cooney and G. R. Horton.—p. 586.
Adenomatoid Tumor of Epididymis. D. Falk and B. E. Konwaler.—p. 603.
Logic of Antimicrobial Therapy. R. D. Herrold.—p. 612.

Total Infarction of Kidneys.—Total infarction of the kidneys from bilateral arterial emboli is rare and the anuria accompanying it may be puzzling to the clinician, but Kaiser and Ross feel that the urologist should be aware of this obscure entity. Bilateral total infarction does not always occur simultaneously. Total infarction of one kidney may precede that of the other by a considerable length of time. Unilateral total infarction in a noninfected kidney results in aseptic autonephrectomy. The kidney contracts and on retrograde pyelogram is similar to a chronic atrophic pyelonephritic or hypoplastic kidney. The pain associated with total infarction is not always severe and is sometimes more abdominal than flank in location. The anuria associated with total bilateral renal arterial infarction, especially in those cases without the typical excruciating flank pain, must be differentiated from anuria due to other causes. An adequate and detailed history is most helpful, and associated cardiac disease suggests infarction. Excretion tests and excretory urograms are valueless. In the absence of antecedent renal diseases a retrograde pyelogram will reveal no abnormalities in the acute phase. Total infarction of long duration produces contracture of the kidney, renal pelvis, and calices. In the presence of acute total infarction, reddish fluid may be obtained on catheterization of the bladder or renal pelvis. This paradoxical finding represents hemoglobin laden fluid liberated by autolysis from the infarcted area. Bilateral total infarction accounts for only a small percentage of the cases of anuria resulting from infarction. Most patients with renal infarction who are dying in anuria show multiple bilateral old and recent small infarcts. If hypertension occurs after total unilateral infarction, it is probably temporary. Complete occlusion of both renal arteries may cause hypertension that persists until death.

Dissolution of Urinary Calculi.—Previous studies demonstrated that solution G, a citric acid solution containing magnesium with a pH of 4.0, readily dissolves certain urinary calculi in which calcium is an important ingredient, except calcium oxalate stones. At the same time that solution G was investigated experimental work was carried out with "calgon," a water softener, which likewise proved a good solvent of calcium-containing calculi and even caused slow dissolution of calcium oxalate stones. However, the water softener ("calgon") produced severe irritation in the bladder of rabbits. Recently Suby and associates experimented with another water softener, ethylene diamine tetra-acetic acid ("sequestrine"). This softener removes from a solution not only calcium ions but also other cations. This softener was used in solutions of 1%, 2%, and 3%. Previous studies having demonstrated that the ability of a solution to demineralize rabbit teeth grossly parallels its ability to dissolve calcium phosphate stones, each of the above solutions was tested on rabbi teeth. There was increasing demineralization of the teeth with increasing concentrations of "sequestrine." The solutions o "sequestrine" were then used as irrigating solutions in the bladders of rabbits. Considerable irritation resulted, albeit less than with calgon. The efficiency of water softeners can often b increased by "wetting agents." The wetting agent "tween 80," which is polyoxyethylene (20) sorbitan mono-oleate, was used with solutions of the water softener. Despite the rather negative results obtained with the wetting agent, the authors feel tha further work with combinations of dissolving solutions and wetting agents is indicated. In addition to studies on rabbit teeth and bladders, the authors present the results of in vitro studies on the effect of "sequestrine" on oxalate and uric acid stones This water softener did dissolve calcium oxalate stones faste than solution G. The rate of dissolution, however, is much slowe than in the case of calcium phosphate stones. It was noted also that "sequestrine" does slowly dissolve uric acid stones, but th same results were obtained with a water solution of phosphat at a pH of 7.0.

Ureterosigmoid Anastomosis.—Cordonnier and Lage had two and a half years' experience with ureterosigmoid anastomosi by the mucosa-to-mucosa method on a total of 54 patients. The are aware that the interval is too short to evaluate the result of cancer surgery, but believe that certain conclusions can b drawn concerning late results of ureterosigmoid anastomosis Forty patients had bilateral ureterosigmoid anastomosis and cystectomy in one stage. Five had two-stage procedures, and in nine cases ureterosigmoid anatomosis alone was done. Th authors believe that the cystectomy is much easier to perform at the time of ureterosigmoid anastomosis, and that the one-stag operation does not increase the operative risk any more than second stage cystectomy would. There was not a single surgica fatality in the 54 patients, and 33 are still living. Of the 1 patients who were operated on more than two years ago, 8, o more than half, are still living and in comparatively good health The average survival of the patients who died was 11.1 months Antibiotics were administered during the immediate postoperative period, and only one patient had signs of early sepsis. Of total of 48 cases in which an accurate follow-up was obtained 27 patients had no chills, fever, or other evidence of urinary sepsis; the other 21 had late sepsis of varying severity. The presence of air in the kidney pelvis, demonstrated roentgenographically, following direct anastomosis has been mentioned as an objection to this method, but the authors feel that this is not justified. Up to as long as two years postoperatively there was air in the kidney pelvis in only five kidneys. With one exception, this occurred in kidneys that were not functioning preoperatively. These patients had few symptoms, and sepsis was not a serious problem. The results of early and late postoperative excretory urography compare favorably with reports of excretory urograms when other methods were used. The late developments of acidosis in patients who have had ureterosigmoid anastomosis is a problem, but is well controlled when recognized. The establishment of a rectal pouch with a permanent colostomy may eventually prove to be the solution for this problem.

Michigan State Medical Society Journal, Lansing

50:1189-1192 (Oct.) 1951

Cysts and Fistulas of Mouth, Head and Neck. J. M. Robb.—p. 1125.
Geriatric Philosophy. F. C. Swartz.—p. 1128.
Surgical Lesions of Upper Abdomen in the Newborn and Infant. C. D. Benson.—p. 1131.
Chronic Ulcerative Colitis in Veterans. H. J. Kullman and P. E. Schmitt. —p. 1133.
Pleural Fluid. G. T. McKean.—p. 1137.
Anesthesia in Chest Surgery. W. K. Wilner Jr.—p. 1141.
Exophthalmos. A. D. Ruedemann.—p. 1143.
Why the Necessity for Iodized Table Salt. J. L. Giles.—p. 1145.
Application of Venereal Disease Control in General Health Program of the Michigan State Medical Society: Historical Resume. R. S. Breakey. —p. 1147.
Americanism and Moral Integrity. R. M. Klemme.—p. 1149.

Minnesota Medicine, St. Paul

34:933-1044 (Oct.) 1951

Hypertrophic Pyloric Stenosis. H. F. Flanagan.—p. 957.
Avascular Necrosis: Report of Cases Involving Distal End of Clavicle and Odontoid Process. E. T. Evans.—p. 970.
Pulmonary Tuberculosis and Carcinoma. G. A. Hedberg, G. G. Graham and W. H. Wierman.—p. 972.
Cytologic Diagnosis of Uterine Malignancies. A. H. Wells.—p. 975.
Accidental Deaths in Minnesota in 1950. A. B. Rosenfield and A. J. Chesley.—p. 983.
Use of Wangensteen Suction in Surgery. A. Ochsner.—p. 991.
Procaine Amide in Treatment of Ventricular Tachycardia. A. Döscherholmen.—p. 992.

New England Journal of Medicine, Boston

245:591-628 (Oct. 18) 1951

Present Concepts Concerning Surgical Management of Duodenal Ulcer. A. W. Allen.—p. 591.
A Community Heart Program: Report of Three Years' Experience. E. E. Kattwinkel, V. A. Getting, E. M. Morris and W. J. Zukel.—p. 595.
Common Pitfalls in X-Ray Diagnosis of Tuberculosis. J. D. Wassersug. —p. 598.
Surgical Treatment of Lymph-Node Metastases. G. W. Taylor.—p. 608.

New Jersey Medical Society Journal, Trenton

48:445-492 (Oct.) 1951

*Occupational and Industrial Dermatoses: Statistical and Analytic Survey of 3042 Cases. B. M. James and J. Bleiberg.—p. 448.
Cancer Diagnostic Services in New Jersey. W. G. Bernhard, A. J. Casselman and E. L. Shaffer.—p. 454.
Psychosurgery. A. Crandell and E. Kessler.—p. 456.
Paroxysmal Arrhythmias in Case of Diffuse Toxic Goiter. S. Rainone. —p. 459.
Treatment of Functional Aspect of Skin Diseases. R. Yontef.—p. 462.
Renal Rickets. W. H. Seward.—p. 464.
Aspirated Arachidic Foreign Body in Bronchus with Obstructive Emphysema in a Child Two Years of Age. G. A. Bradasch and L. Sciarrillo. —p. 467.
ACTH and Cortisone in Allergic Diseases. W. B. Sherman.—p. 470.
Diagnosis of Intestinal Neoplasms. L. J. Boyd, W. L. Mersheimer and E. J. Nightingale.—p. 474.

Occupational Dermatoses.—James and Bleiberg analyzed the records of 3,042 patients with dermatoses alleged to be the results of occupational contacts. The diagnosis was made on the basis of the history and physical examination, but patch tests were used when necessary, and, in many cases, visits to the place of employment were made, or the manufacturer of the offending substances was asked for further information. When occupational etiology was not quite certain, the patient was usually given the benefit of the doubt. However, the authors saw cases of scabies, erythema multiforme, lichen planus, secondary syphilis, lichen chronicus circumscriptus, pityriasis rosea, erythrasma, arsenical keratoses, balanitis diabeticorum, and Boeck's sarcoid being treated as "ocupational." The patients with skin lesions of real occupational origin were classified into nine different etiologic groups. The authors mention among others dermatitis involving entire gangs of longshoremen who had been unloading drums of cashew nut oil, and the increased frequency with which pharmaceutical workers, doctors, dentists, and nurses are becoming sensitized to antibiotics. Trauma from glass wool used in insulation caused many cases of pruritus, as well as foreign body abscesses and furunculosis. Wet work caused lesions, particularly in patients with histories of atopic reactions. The dermatoses caused by petroleum products and solvents were simple erythema, vesicular bullous eruption, eczematous dermatitis, generalized exfoliative dermatitis, comedones, acne, follicular infections, abscesses, keratoses, epitheliomas, melanoses, depigmentations, multiple sebaceous cysts, atrophy, and telangiectasia. An increasing number of workers are being exposed to radiation hazards. The occupational infections observed included tuberculosis, yeast infections, tinea profunda, Madura foot, anthrax, erysipeloid, and brucellosis. Secondary infections were produced by a wide variety of organisms and were usually superimposed on traumatized areas of skin. Occupational dermatoses are frequently superimposed on preexisting skin diseases, and such cases often lead to litigation. Preemployment examinations should if possible screen out persons with dermatoses likely to become aggravated by contact with certain substances. Cleanliness of environment lessens industrial exposure. Many cases of severe dermatitis resulted from over-treatment or from treating minor abrasions with sensitizers. Antibiotic ointments (penicillin) and chemotherapeutic ointments (sulfonamides) frequently increased the period of disability.

New York State Journal of Medicine, New York

51:2295-2438 (Oct. 15) 1951

*Modern Management of Alcoholism. K. Goldstein and R. S. Kidder. —p. 2347.
General Medical Care of Diabetic. E. W. Gates.—p. 2353.
Use of ACTH and Cortisone in Certain Medical Diseases. B. M. Norcross.—p. 2356.
Recent Advances in Treatment of Bronchial Asthma. C. E. Arbesman. —p. 2361.
Neuropsychiatric Disorders of Aged. I. J. Sands.—p. 2370.
New Developments in Care of Aged Mentally Ill. O. K. Diamond. —p. 2375.
Response of Human Urinary Bladder to Certain Pharmacologic Agents. E. W. Corradini.—p. 2379.
Method of Rapid Restoration of Neuromuscular Function in Poliomyelitis. A. W. Schenker.—p. 2383.
Ascorbic Acid in Treatment of Burns. D. H. Klasson.—p. 2388.
Experiences in Treatment of Rheumatoid Arthritis with Cortisone. S. Davison.—p. 2393.
Indiscriminate Transfusion: Critique of Case Reports Illustrating Hypersensitivity Reactions. R. D. Barnard.—p. 2399.
Medical Problems in Diabetic Surgery. H. A. Cochrane and L. Gross. —p. 2403.
New Vasodilating Agent. J. R. Murphy.—p. 2407.
Newer Concepts on Surgical Management of Megacolon. F. D. Conole. —p. 2409.
ACTH and Cortisone in Ophthalmologic Practice. F. P. Koch.—p. 2411.

Modern Management of Alcoholism.—This paper is a report on experience with approximately 400 alcoholics between the ages of 19 and 75 at the University of Buffalo clinic for the rehabilitation of alcoholics. On the basis of this experience the authors recomend the following procedure for the treatment of the alcoholic in private practice: (1) evaluation of motivation for help; (2) medical, sociologic, and brief psychiatric history; (3) physical examination and indicated laboratory work; and (4) therapy to include treatment of physical abnormalities, education of the alcoholic regarding his problem including referral to Alcoholics Anonymous, and psychotherapy. In regard to the new methods of treatments with tetraethylthiuramdisulfide (antabuse®) and adrenocortical extract that were given a therapeutic trial in 25 and 13 patients respectively, antabuse® requires specialized medical and psychiatric investigation of the alcoholic, hospitalization, and even when used under ideal circumstances is not without danger. At least for the present, antabuse® should be regarded as an adjunct to therapy in selected cases and should be used only by physicians familiar with the drug. Adrenal cortical extract has been of greatest benefit in treatment of the acute phase and prevention of delirium tremens. Its usefulness in the interval phase remains to be evaluated. Much more investigative work is necessary regarding subclinical hypopituitarism or hypoadrenocorticism as a factor in causing and perpetuating alcoholism. Low urinary 17-ketosteroid levels must be evaluated individually on the basis of sex and nutrition. The eosinophil response to corticotropin (ACTH) would have to be determined in each person showing an abnormal eosinophil response to epinephrine. Furthermore, one can only wonder about the role of poor nutrition, especially depleted vitamin C content of the adrenals, in producing a poor response in eosinophil tests. Lastly, each person would have to be evaluated as to the phase of shock, countershock, and exhaustion as outlined by Selye, and persons who respond poorly should be retested at intervals.

Pediatrics, Springfield, Ill.

8:455-602 (Oct.) 1951

*Protein and Amino Acid Requirements of Infants. A. A. Albanese.—p. 455.
Intracranial Complications of Congenital Dermal Sinuses. D. D. Matson and F. D. Ingraham.—p. 463.
*Effect of Carotid-Jugular-Anastomosis Operation upon Intelligence. J. W. Kessler.—p. 475.
Pseudomonas Aeruginosa Infection as Complication of Therapy in Pancreatic Fibrosis (Mucoviscidosis). S. D. Garrard, J. B. Richmond and M. M. Hirsch.—p. 482.
Isolated Cervical Lymphogranuloma Venereum in Child. D. Roth and R. Schulick.—p. 489.
Some Observations on Facial Paresis in Newborn Infant: Etiology and Incidence. W. R. Hepner Jr.—p. 494.
Middlebrook-Dubos Hemagglutination Reaction: Study of Test in Children. H. W. Anderson and R. V. Platou.—p. 498.
Clinical Survey of Vascular Complications in "Juvenile Diabetes Mellitus." H. G. Grayzel and H. B. Warshall.—p. 506.
Studies on Prematurity: IV. Influence of Fetal Maturity on Weight Lag Period. M. Steiner and W. Pomerance.—p. 513.
Method of Obtaining Anaerobic Arterial Blood Samples from Infants. F. E. Hytten and R. B. Cherry.—p. 518.
Fibrous Sternomastoid Tumor of Infancy. J. Gruhn and E. S. Hurwitt.—p. 522.
Production of Congenital Defects in Offspring of Pregnant Mice Treated with Cortisone: Progress Report. F. C. Fraser and T. D. Fainstat.—p. 527.
Pseudocyst of Pancreas in Childhood. J. Mithoefer.—p. 534.
Congenital Megacolon (Hirschsprung's Disease): Follow-up on 82 Patients Treated Surgically. O. Swenson.—p. 542.
Clinical Observations on Trichocephalus Trichiurus (Whipworm) Infestation in Children. R. C. Jung and P. C. Beaver.—p. 548.

Protein and Amino Acid Needs of Infants.—Protein provides the child with the basic building material for growth. In this country, human or cow's milk is the principal protein-containing od of early infancy. The average protein content of human ilk is 1.25%; that of cow's milk, 3.5%. Since the proteins of both milks contain abundant and comparable amounts of all the amino acids essential for growth, the protein needs for growth are automatically met by providing sufficient milk of either variety. The author stresses, however, that unsupplemented breast feeding of infants beyond the third month is nutritionally inadequate. For evidence to support this claim, he cites studies carried out on Chinese children, who are for the most part breast-fed. Nutritional inadequacy of unsupplemented breast feeding of infants beyond the third month of life arises primarily from quantitative rather than qualitative limitations of certain amino acids. On the basis of amino acid composition data and the biologic value of a number of proteins tested in infants, it appears that to overcome the defects of this feeding practice that still prevails in large areas of the world the necessary diet supplements should be derived principally from animal protein sources, milk and meat, rather than cereal proteins. The cereal proteins, wheat and corn gluten, appear to be unsatisfactory supplemental foods because of their lysine deficiency. The tryptophane deficiency of corn proteins is not critical since the tryptophane needs of the infants are provided in the mother's milk. However, the poor absorbability of corn gluten, possibly due to an amino acid imbalance, does not recommend the use of corn products. The efficacy of soybean flour as an infant food supplement has been amply demonstrated, and where there is lack of animal proteins for infant feeding, soybean milk may be employed to advantage.

Carotid-Jugular Anastomosis and Intelligence.—The carotid-jugular anastomosis operation was designed to increase the cerebral circulation in the hope of improving the mental abilities of retarded children as well as procuring other beneficial effects in children and adults suffering from such physical disabilities as convulsive disorders and sensory-motor impairment. The 33 cases reported in this study all concerned children who had had standard psychometric tests before and after surgical treatment. On the basis of the data reported in this paper, the earlier assertion by other authors "that this procedure represents the first successful attempt at correction of mental retardation on an organic basis" is not fulfilled. The improvement in two cases presented in the first published report by these authors has not been sustained by later study. The statement that children with intelligence quotients between 40 and 60 show the greatest improvement is contradicted by the present author's findings. There is virtually no evidence in this study (significant improvement in 1 case out of 33) for crediting the carotid-jugular anastomosis with improvement of the intellect. The majority of the patients in these cases were tested several months after surgery so that whatever improvement was going to occur should have been manifest, according to the statement of McKhann, Belnap, and Beck that "improvement usually begins to appear in the retarded children within the first two postoperative months."

Psychoanalytic Review, Albany, N. Y.

38:305-406 (Oct.) 1951. **Partial Index**

Types of Activity in Psychoanalytic Technique. G. Frumkes.—p. 305.
Agoraphobia as Manifestation of Schizophrenia: Analysis of Cas W. Schmideberg.—p. 343.
Contribution to Psychoanalytical Study of Projection and Introjection J. Flescher.—p. 353.

Public Health Reports, Washington, D. C.

66:1263-1302 (Oct. 5) 1951

Body Mechanisms in Progressive Tuberculosis. H. M. Payne.—p. 126
Nursing in Tuberculosis Hospitals. M. B. Naylor.—p. 1272.

Rocky Mountain Medical Journal, Denver

48:729-810 (Oct.) 1951

Presidential Address. H. C. Bryan.—p. 751.
Cerebral Palsy: Spasticity. W. L. Minear.—p. 757.
Irreducible Minimum in Maternal Mortality. P. D. Bruns.—p. 767.
Echinococcus Disease: Report of Four Cases Contracted in the Unite States. J. H. Carlquist and R. J. Dowell.—p. 773.
Spina Bifida. W. E. Reckling.—p. 776.

Southwestern Medicine, El Paso, Texas

32:325-360 (Oct.) 1951

Management of Acute Cholecystitis. L. Goldman.—p. 341.
Hazards of Delay in Gallbladder Surgery. R. S. Sparkman.—p. 34

32:361-396 (Nov.) 1951

Surgery in Pulmonary Disease. J. W. Gale.—p. 372.
Nonpenetrating Injuries of Abdomen. C. J. Miangolarra and C. C Craighead.—p. 379.

Virginia Medical Monthly, Richmond

78:581-634 (Nov.) 1951

Brief History of Medical Society of Virginia and Its Functions. C. L Harrell.—p. 584.
The "L. E. Cell"—Phenomenon of Diagnostic Value in Acute Dissemi nated Lupus Erythematosus. J. E. Stevens, J. F. Wine, A. Pepple an M. E. Rader.—p. 590.
Evaluation of Epilepsy Program in Virginia. J. E. Barrett, J. B. Funk houser, D. L. Harrell and others.—p. 598.
Endometrial Hyperplasia in Elderly Women with Hepatic Cirrhosis F. L. Apperly.—p. 602.
Laboratory Aids in Diagnosis of Bone Lesions. E. B. Carpenter an J. T. Tucker.—p. 603.

FOREIGN

Acta Chirurgica Scandinavica, Stockholm

102:87-166 (Oct. 6) 1951. **Partial Index**

Fractures of Upper Thoracic and Cervical Vertebral Bodies. O. Olsson. —p. 87.
Mechanism of Cervical Radicular Lesions Resulting from Friction or Forceful Traction. R. Frykholm.—p. 93.
Extradural Hematomas: Survey of Cases Covering 20-Year Period with Special Reference to Diagnosis. H. Brodin.—p. 99.
Spinal Anesthesia and Hypotension Headache. K. Boman.—p. 110.
*Streptomycin in Surgical Treatment of Bone and Joint Tuberculosis. S. Orell.—p. 113.
*Comparison Between Clinical Results and Bacterial Sensitvity Tests in Treatment of Urinary-Tract Infections with Chemotherapy. G. Giertz and B. Gullbring.—p. 121.
Lateral Aberrant Thyroid Cancer. A. Olsen.—p. 128.
Ultimate Results After Transurethral Prostatic Resection. H. Sommerfeldt.—p. 135.
Prognosis and Treatment of Congenital Atresia of Esophagus. M. Sulamaa, L. Gripenberg and E. K. Ahvenainen.—p. 141.

Streptomycin in Bone and Joint Tuberculosis.—At the St. George Hospital in Stockholm 250 patients, 31 with spondylitis, 14 with trochanteritis, and 205 with joint tuberculosis, were given surgical treatment combined with chemotherapy. The lesions were excised under a protecting "umbrella" of streptomycin and penicillin applied as dry powder (1 to 3 gm. of streptomycin and 200,000 to 600,000 units of penicillin) to the wound. The antibiotics were also administered intramuscularly and in combination with *p*-aminosalicylic acid by mouth according to the following schedule: treatment began and ended with the oral administration of *p*-aminosalicylic acid in daily doses of 10 to 14 gm. For 14 days, starting 3 days before the surgical intervention, 1 gm. of streptomycin divided in two doses, and penicillin (500,000 units divided in two doses or 300,000 units of procaine penicillin in one dose) were given daily by intramuscular route. Administration of *p*-aminosalicylic acid was reduced or completely discontinued during this period. The maximum follow-up period has been only two years, which is too short to permit definite evaluation of the results. Primary healing was obtained in all instances. Sinus formation and prolonged suppuration did not occur, and tuberculosis did not recur, even after surgical intervention in early stages of the disease. Radical surgery seems to be effective when streptomycin and penicillin in powder form are applied locally to the wound. Results obtained suggest that by treating sinuses, bone lesions, and joint capsules (synovectomy) by the author's method, it will probably be possible to shorten the duration of treatment and to prevent functional disturbances as well as relapses.

Chemotherapy in Urinary Tract Infections.—Clinical results were compared with results of bacterial sensitivity tests in vitro in 200 patients with urinary tract infections treated with sulfonamide compounds, penicillin, and streptomycin. Sulfamethazine was given in doses of 1 gm. or 0.5 gm. five times daily, penicillin in doses of 400,000 units daily, and dihydrostreptomycin in doses of 1 to 2 gm. daily. Bacteriological examination of the urine was carried out before and after the treatment, and as a rule at least once weekly during prolonged treatment. Bacteria that had shown sensitivity in vitro to 20 mg. of sulfamethazine per 100 ml. of culture medium, to 16 units of penicillin, and to 125 γ of streptomycin per milliliter of medium disappeared from the urine in most of the patients after administration of the respective drugs. Bacteria that were resistant in vitro to 80 mg. of sulfamethazine per 100 ml. of culture medium, to 64 units of penicillin, or to 500 γ of streptomycin per milliliter as a rule persisted in the urine of patients given chemotherapy. Of the 108 bacterial strains that were sensitive in vitro, all but 7 disappeared from the urine during chemotherapy. Of the 180 strains that were resistant in vitro, only 8 responded to chemotherapy. Discrepancy between clinical results and those of in vitro sensitivity tests thus was observed in 5% of the clinical material. Bacteria sensitive to 80 mg. of sulfamethazine per 100 ml. of culture medium to 64 units of penicillin or to 500 γ of streptomycin per milliliter of medium formed an intermediate group. In infections due to these bacteria, chemotherapy yielded good clinical results in some instances, but was ineffective in others.

Bol. Soc. Chilena Obst. y Ginec., Santiago

16:129-154 (Aug.) 1951. **Partial Index**

*Placenta Accreta. H. Cabrera, J. Claramunt and E. Peña.—p. 129.

Placenta Accreta.—In 86,983 deliveries at a maternity hospital in Chile during the last six years, 12 cases of placenta accreta were observed, a frequency of 1 case per 7,248 deliveries. Seven of these women delivered at full term, and five delivered after 6½ to 8½ months of pregnancy. Ten women had had one or more abortions, eight one or more uterine curettages, five retention and manual extraction of the placenta in one or more previous deliveries, one a cesarean section, two endometritis, and two cured syphilis. Placenta accreta is diagnosed during the third stage of labor when there is difficulty in spontaneous elimination of the placenta, acute uterine hemorrhage, and no response to attempts at manual extraction of placenta and to the administration of posterior pituitary injection. In two of the reported cases the placenta accreta was total, in six it was partial with placenta praevia and uterine bleeding since pregnancy, and in four it was partial without bleeding during pregnancy. Uterine bleeding during the third stage of labor was acute in all cases. In seven patients the treatment consisted of manual extraction of the placenta and instrumental cleaning of the uterus. One of the patients died from blood loss two hours after extraction of the placenta. Hysterectomy was performed in the remaining five cases, with two deaths occurring from hemorrhage. Supplemental treatment in all cases consisted of administration of oxytocic drugs, dextrose solution, blood transfusions, and drugs for control of general infection. Manual or instrumental extraction of the placenta is indicated when there are neither complications nor previous uterine bleeding of long duration, but hysterectomy is indicated in cases complicated by placenta praevia, bleeding since pregnancy, and the failure of manual or instrumental vaginal procedures.

British Medical Journal, London

2:921-986 (Oct. 20) 1951

The Spread of Influenza: Evidence from 1950-1951. A. Isaacs and C. H. Andrews.—p. 921.
Relation of Adrenal Cortical Function to Scurvy in Guinea-Pigs: Preliminary Experiments. B. E. Clayton and F. T. G. Prunty.—p. 927.
Preparation of Clean Chemical Solutions with Special Reference to Radioactive Phosphorus Solutions for Clinical Use. G. E. Harrison and W. H. A. Raymond.—p. 930.
Some Autoradiographic Studies of Non-Uniform Distribution of Radioactive Phosphorus in Tissues. L. F. Lamerton and E. B. Harriss. —p. 932.
Chromaffin Tumor with Chronic Hypertension. G. Lumb.—p. 936.
Treatment of Chronic Otorrhoea with Chloramphenicol. R. S. Lewis and J. D. Gray.—p. 939.
Pethidine and General Anaesthesia. M. Johnstone.—p. 943.
Uric-Acid Levels in Blood and Plasma. H. E. Archer and E. Rhoden. —p. 947.
Epidemic of Bornholm Disease: Preliminary Report. J. B. M. Davies and J. F. Warin.—p. 948.

Uneven Distribution of Radioactive Phosphorus in Tissues.—For the estimation of the radiation received by tissues after the administration of radioactive isotopes, it is generally assumed that there is a uniform or continuous distribution of isotope within a partciular tissue. It was found, however, that autoradiographs of sections of rat liver and spleen following intravenous injection of P^{32} (as Na_2HPO_4) in isotonic sodium chloride solution had a very "spotty" appearance, indicating uneven distribution. After intraperitoneal injection the isotope was distributed reasonably uniformly. The authors describe the preparation of tissues for autoradiography and the making of contact and stripping film autoradiographs. They also found at autopsy nonuniform distribution of radioactivity in the liver, spleen, and tumor tissue of a patient with metastatic sarcoma who had received intravenous injections of P^{32} 17 days before death. The radioactivity of these tissues, as determined by a liquid counter, were as follows: liver, 0.035 µc. per gram; spleen, 0.046 µc. per gram; secondary tumor, 0.029 µc. per gram. Autoradiographs of smears of the original P^{32} solution indicated that particulate material was present that concentrated the activity. This particulate material can arise in preparation of the active solution or as a result of allowing the solution to stand in a syringe, unless special precautions have been taken. The nonuniformity of activity resulting may considvenous transfusions of 350 cc. of blood of pregnant women every other day. Results were good, proving that rheumatic fever may be treated with this method. Definite but transient eosinophilia was observed in patients who received blood of pregnant women, while the number of eosinophils did not change in patients who received normal blood. The increase in 11-oxycorticosteroid excretion was pronounced after transfusion of blood of pregnant women but slight after transfusion of normal blood. Excretion of 17-ketosteroids remained unchanged. The erythrocyte sedimentation rate decreased after transfusion of pregnant women's blood, but not after transfusion of normal blood. It is suggested that greater amounts of progesterone, estrogen, and gonadotropin are present in the blood of pregnant women, as well as significant amounts of cortisone. Further studies are needed to test this assumption and to prove that blood from pregnant women has a cortisone-like action in patients with rheumatoid arthritis and rheumatic fever.

Policlinico (Pract. Sect.), Rome

58:1025-1056 (Aug. 13) 1951

Acute Septic Osteomyelitis of Vertebrae: Clinical Observations and Therapeutic Conclusions. F. Romeo.—p. 1025.
Technique of Intrabronchial Catheterization "Under Direct Vision" With Aid of Métras Tube. C. Scarinci and E. Ciamillo.—p. 1032.
*Angiopneumocardiography in Streptomycin Therapy of Pulmonary Tuberculosis. E. Fasano and O. Gasparri.—p. 1036.

Angiopneumocardiography in Pulmonary Tuberculosis.—Angiopneumocardiography was performed in 107 patients with pulmonary tuberculosis to evaluate the effect of streptomycin therapy with regard to injuries of the blood vessels. The examination proved that anatomic vascular damage was related to the type, extent, and number of tuberculous foci. When exudative foci of recent formation were localized in one or more zones, angiopneumocardiograms were normal, indicating that streptomycin can be carried to the foci in sufficient doses. With small ulcerations not easily detected by standard radiography, angiopneumocardiography revealed irregularities and diminution of the network of vessels. In cavitary tuberculosis of recent formation decreased circulation was observed in the region of the cavity. In cavitary tuberculosis of long duration absence of circulation was more pronounced, and irregularities of the blood vessels extended to the adjacent areas. This diminished vascularity in cavitary tuberculosis explains the failure of streptomycin therapy, in that the antibiotic does not reach the foci in sufficient concentration. In all these patients angiopneumocardiograms taken before and after streptomycin therapy were the same, proving that the vascular damage of a tuberculous lung is irreversible.

58:1185-1216 (Sept. 17) 1951

Myoedema. A. Pozzi.—p. 1185.
'Anesthetic Bath" of Sympathetic Nervous System and Its Applications in Renal Pathology. G. Dell'Adami and A. Franchini.—p. 1190.
*Excretion of 11-oxycorticosteroids and 11-desoxycorticosteroids in Urine of Normal Persons and of Patients with Addison's Disease and Chronic Arthritis. L. Di Girolamo, L. Natoli, V. Patrono and others.—p. 1197.

"Anesthetic Bath" in Renal Lesions.—The technique of infiltration anesthesia called "anesthetic bath" was employed in 52 middle-aged patients with anatomic and functional lesions of the kidneys and ureter. This method consists of injecting very slowly large amounts of an anesthetic in low concentration in the cellular-adipose tissue surrounding the sympathetic nervous system. The lumbar region is the area of choice because its topography and the presence of adipose retroperitoneal cellular tissue enhance diffusion of the fluid. This surrounds a large area of the sympathetic nervous system and paralyzes its sensory and motor fibers. A dose of 250 cc. of procaine hydrochloride in 30% concentration was injected in the patients. Results were immediate and the treatment was almost definitive in 15 patients with calculous renal colic in whom pain subsided within few minutes. Spontaneous passing of a calculus occurred in three of these patients after two anesthetic baths. In 24 patients with chronic nephralgia the pain was relieved more slowly and reappeared after 8 to 12 hours, making additional anesthetic baths necessary. In 10 patients who had pyelitis or ureteritis an antibiotic was administered with the anesthetic bath. Good results were also obtained in four patients with anuria. Side-effects were not observed in any of the patients and the general condition was not impaired. Anesthetic bath is the simplest and easiest technique of infiltration anesthesia. Its therapeutic effect is more complete and lasts longer than that obtained with regional infiltration and nerve block.

Prensa Médica Argentina, Buenos Aires

38:2121-2186 (Aug. 24) 1951. **Partial Index**

General Pathology of Bronchial Stenosis. A. de Paula.—p. 2127.
*Uremic Lung. M. Kabanchik and M. Kleimans.—p. 2143.

Lung in Uremia.—Clinical and roentgenographic pulmonar changes in patients with chronic renal disease accompanie by severe uremia are probably due to increased azotemia, wit or without cardiac failure; in nonfatal cases the changes dis appear as the urea level decreases and the clinical condition im proves. Clinical signs such as cyanosis, dyspnea, or cough ma be slight or may suggest pulmonary disease, but x-ray study o the lungs shows that the one characteristic feature of uremi changes is that they are concentrated in the central part of th lung, leaving the peripheral areas free. Crepitant and subcrep tant râles are heard by auscultation over the lung fields that hav characteristic roentgenographic shadows. These shadows are c the micronodular, floccular, or pseudocavitary type and diffe from the roentgen shadows appearing in cardiac failure, miliar pulmonary tuberculosis, tumors, and other diseases of the lun The author believes that there are factors, as yet unknown, th explain why these changes occur in the lungs of some patien and not in those of others. Three cases are reported.

Presse Médicale, Paris

59:1281-1300 (Oct. 6) 1951

Notion of Time in Course of Pathological Processes. R. Leriche.—p. 128
*Question of Obtaining a Cure of Renal Tuberculosis by Medicinal Trea ment. E. Chauvin, H. F. Chauvin and A. Orsoni.—p. 1281.

Medicinal Treatment of Renal Tuberculosis.—The followin scheme was employed in treatment of 100 patients with tube culosis of the kidneys: Each patient was given several 30-da courses of treatment with 30-day rest intervals between th courses. Each course consisted of two periods. During the fir period of 10 days, the patient received 5 cc. of chaulmoogra o intramuscularly every second day. During the second period c 20 days, the patient received daily 2 cc. of chaulmoogra o intramuscularly, 2 gm. of streptomycin intramuscularly in tw divided doses, and 7 to 14 gm. of *p*-aminosalicylic acid in gradu ally increasing doses. This continuous treatment caused littl fatigue to the patient and did not seem to induce streptomyci resistance, since functional signs of improvement became man fest mainly within the first days of the second period. Resul of treatment should be evaluated only after three courses c treatment. Of these 100 patients, only 24 received three course and were observed more than a year. Of the 24, 9 apparentl recovered with disappearance of functional disturbances as we as of pus and Koch's bacilli from the urine. Three of the nin patients had a recurrence of symptoms that subsided definitel after a fourth 30-day course. Eight patients were improved wit respect to cystitis and general condition, but pus and Koch bacilli were still present in the urine. The remaining seven pa tients were therapeutic failures. Recoveries such as those ol tained in the authors' nine patients may not yet be considere permanent and may be expected only in patients with earl tuberculous lesions of the kidneys in the absence of cavitatio and pronounced changes of the ureters.

59:1301-1320 (Oct. 10) 1951. **Partial Index**

Appeal for Publishing Observations Concerning Medical Genetics. A Touraine.—p. 1301.
Metabolic Activity of Calcium Salt of *p*-aminosalicylic Acid; Doe *p*-aminosalicylic Acid Exert Pituitary Antihormone Action in Additio to Its Antibacterial Action? J. Desbordes.—p. 1303.
Treatment of Ventricular Paroxysmal Tachycardia with Procaine Amid F. Siguier and J. J. Welti.—p. 1304.

Metabolic Activity of Calcium Salt of *p*-Aminosalicylic Acid.— Various metabolic processes were studied systematically in pa tients treated with the calcium salt of *p*-aminosalicylic acid. I was found that the body weight of the patients was increase as a result of nitrogen retention rather than of water retention. The blood volume was diminished according to the hematocrit determinations. There was an increase in blood potassium levels, a tendency toward acidosis, decreased concentration of blood sodium, chloride, cholesterol, and glucose, and a tendency toward hyperproteinemia. White blood cell counts revealed a high eosinophilia with a tendency toward an increased number of lymphocytes and a reduced number of neutrophils. Examination of the urine revealed a tendency toward a fall in total nitrogenous constituents and in excretion of uric acid and 17-ketosteroids. These results contrast with those obtained in patients treated with corticotropin (ACTH). *p*-Aminosalicylic acid also exerts an effect opposite to that of corticotropin in tuberculosis. Experimentally produced tuberculosis in mice and guinea pigs is aggravated by cortisone and corticotropin, whereas in human tuberculosis *p*-aminosalicylic acid has a favorable effect on generalized symptoms, such as fever, loss of weight, appetite, sweating. It is suggested that *p*-aminosalicylic acid inhibits the secretion or action of corticotropin in addition to its antibacterial action.

Procaine Amide in Ventricular Paroxysmal Tachycardia.—Favorable results obtained by Mark and co-workers with procaine amide in treatment of ventricular arrhythmias induced the French authors to try this drug in treatment of prolonged attacks of ventricular paroxysmal tachycardia. With the patient in recumbent position and the head lowered, the drug was administered slowly (2 cc. or 200 mg. per minute) by intravenous route, under continuous electrocardiographic control and with measurements of arterial blood pressure taken every minute. From 2 to 15 cc. were required to check the attack. Although undesirable effects of the drug were not reported, it may be necessary to slow down and occasionally to discontinue the injection if severe nausea occurs or if hypotension, which is usually present in prolonged ventricular paroxysmal tachycardia, becomes more pronounced. Oral administration of procaine amide in daily doses of 4 to 5 gm. in divided doses, which later may be reduced to 3 gm. and even to 2 gm., proved sufficient to prevent relapses and to interrupt subintrant paroxysmal attacks of ventricular tachycardia. In patients with ventricular extrasystoles procaine amide also proved highly effective when administered orally in divided doses of 1 to 3 gm. daily.

Proceedings of Royal Society of Medicine, London

44:773-828 (Sept.) 1951. Partial Index

The 1951 Influenza Viruses. A. Isaacs.—p. 801.
Epidemiology of Influenza in Light of the 1951 Outbreak. C. H. Andrewes.—p. 803.
Juvenile Rheumatoid Arthritis (Still's Disease). J. H. Middlemiss.—p. 805.

44:829-904 (Oct.) 1951. Partial Index

Analgesics as Supplements During Anaesthesia. W. W. Mushin.—p. 840.
Some Structural Defects in Upper Uterine Segment, Associated with Abnormal Uterine Action in Labour. A. C. Palmer.—p. 867.
Activity of Cervix of Human Uterus and Its Response to Drugs. H. O. Schild.—p. 869.
Anatomy of Human Cervix in Pregnancy. P. E. Hughesdon.—p. 871.
The Relapse Club Foot. A. T. Fripp.—p. 873.

Rev. Asociación Médica Argentina, Buenos Aires

65:277-316 (July 15-30) 1951. Partial Index

Adrenalectomy: Indications and Results. P. Wertheimer.—p. 277.
*Sciatica. G. Costa Bertani.—p. 300.

Sciatica.—Discovery of the etiologic and pathogenic factors in cases of intractable sciatica of long standing is essential for correct treatment. Genitourinary disorders, congenital spinal anomalies, flat feet, bony alterations in the feet and legs, osteoarthritis of the lumbar spine, radiculitis of various kinds, and infectious diseases such as typhoid, brucellosis, and influenza may give rise to low back pain. The pain simulates that caused by disk pressure, whether there is radiation along the trunk of the great sciatic or not. The author believes that a thorough examination of the patient will disclose the true cause of the pain. This examination should be made by a general practitioner and not by a specialist, because the general practitioner is in a better position to evaluate the data obtained. Careful interrogation and a complete history will also be helpful in making a correct diagnosis. The treatment of choice is medical. Orthopedic and surgical treatment have special indications. Eighty per cent of the author's patients were relieved by medical means: the other 20% required orthopedic or surgical treatment. He stresses the fact that correction of an underlying cause will often cure even longstanding sciatica.

Revista Brasileira de Cirurgia, Rio de Janeiro

22:1-78 (July) 1951. Partial Index

*Treatment of Carcinoma of Bladder. G. S. de Gouvêa.—p. 3.

Treatment of Bladder Carcinoma.—Total cystectomy is the most rational and effective method of treating urinary bladder carcinoma if it can be carried out before metastases appear. The conservative attitude of many urologists is not warranted, because the neoplasm in its early stages is confined to the bladder and radical surgery at this time may result in cure. Many patients who formerly would not have been benefited by surgery can now undergo operation safely because of the use of antibiotics, methods of prevention and treatment of shock, newer concepts of water, saline, and protein balance, and other technical advances. The author lists four classes of neoplasms as requiring total cystectomy: (1) papillary carcinomas of low malignancy which tend to recur; (2) papillary carcinomas of low malignancy in multiple locations; (3) infiltrating papillary carcinomas and infiltrating carcinomas of whatever size and degree of malignancy located at the base of the bladder or connected with the ureteral meatus or the neck of the bladder; and (4) papillary carcinomas, infiltrating papillary carcinomas, and infiltrating carcinomas, of whatever degree of malignancy or location, when they are large or medium-sized. The urinary stream is diverted either before cystectomy or concurrently. The author considers ureterosigmoidostomy the ideal procedure; death seldom results from the operation and the urinary stream diversion does not interfere with any occupation or social activity. He has performed the operation for various reasons in more than 90 cases with complete success. Most of the 41 cases of urinary bladder carcinoma reported here were so far advanced that cystectomy was carried out as a palliative measure; nevertheless, of 18 living patients, 1 has survived for 13 years; 1 for 6 years; 1 for 5 years; and 13 for from 1 to 3 years.

Revista Clínica de São Paulo

27:79-100 (July-Aug.) 1951. Partial Index

*Acute Case of Chagas' Disease: Treatment with New Drug. O. M. de Barros and D. P. Nogueira.—p. 79.

New Drug in Acute Chagas' Disease.—Carbidium sulfate (168C49) proved effective against experimental Trypanosoma cruzi infections in mice. It has no toxic effects when administered intravenously in spaced doses. The authors used it in treatment of a 14-year-old girl with acute Chagas' disease. She had had unilateral periorbital edema and other ocular symptoms with fever for a month, and showed enlarged cervical, submental, and preauricular lymph nodes on the right side. She gave a history of having been bitten several times by Triatoma bugs. Daily blood smears for one week preceding treatment consistently showed large numbers of T. cruzi parasites. The patient was febrile throughout this period, with persistence of Romaña's sign. The area of the roentgen shadow of the heart was increased 24% above normal. Sixteen milligrams (0.5 mg. per kilogram of body weight) of carbidium sulfate in a 0.5% solution, or 3.2 cc. of the solution daily, was administered intravenously on five successive days. One-half the dose was given on the first day, in order to test the patient's tolerance for the drug. No harmful effects were noted. Blood smears after the first series of treatments still showed active forms of T. cruzi, although in reduced numbers. A new series was carried out, using 6.4 cc. of the solution daily (1 mg. of the drug per kilogram of body weight). Blood smears made after this series showed complete disappearance of circulating parasites, a phenomenon which sometimes occurs in the natural evolution of the disease. Two months after treatment began the patient was discharged in perfect health, with instructions to return in three months for follow-up. The authors stress that her heart, which was enlarged before treatment, as a result of the disease, returned almost to normal size following treatment. This change apparently resulted directly from the action of the drug. Further study and use of carbidium sulfate is needed to determine whether it is genuinely effective in treating the acute stage of Chagas' disease.

Revista Médica de Chile, Santiago

79:553-614 (Sept.) 1951. **Partial Index**

*Corticotropin (ACTH) and Cortisone in Rheumatoid Arthritis. J. Zañartu, M. Losada and V. Ide.—p. 558.
*Absorption of Corticotropin (ACTH) by Respiratory Route. J. Grau, C. Larrain and I. Duque.—p. 588.

Corticotropin and Cortisone in Rheumatoid Arthritis.—Corticotropin (ACTH) and cortisone are indicated in rheumatoid arthritis as concomitant treatment with either gold or copper therapy. Cortisone alone or with corticotropin was given to 25 patients with typical rheumatoid arthritis of long duration. Three of the patients had Felty's syndrome. All of the patients had acute rheumatic symptoms that had not responded to previous treatment. The disease was advanced in 19 cases. The drug was given intramuscularly and/or orally. The initial dose was 100 mg. of either drug. The maintenance dose varied between 25 and 100 mg. of cortisone and between 10 and 40 mg. of corticotropin, either daily or at two or three day intervals up to a total dose of from 2 to 3 gm. for each course of treatments. The series was repeated two or three times at intervals of one month. Combined treatment with either gold or copper salts was given to 17 patients. The hormonal treatment resulted in the immediate control of local pain and inflammation, improvement of the general condition, appetite, physical strength, anemia, and leukopenia, and control of fever and of the symptoms of infection in all patients, regardless of the stage of the disease. The erythrocyte sedimentation rate diminished to normal early in 15 of 18 cases and late following treatment in one case. In two cases it did not change. In cases of Felty's syndrome splenomegaly and hepatomegaly greatly but temporarily diminished. The results of treatment were as good for patients with a negative response to the Thorn's test of epinephrine-induced eosinopenia as for those with a positive response. Improvement appeared later in the former patients than in the atter. The functional response of the joints was good in the ix patients in the early stage of the disease and poor in the 19 patients with articular lesions. The disease recurred within the first two weeks after hormonal treatment in the majority of cases. Fifteen patients are still receiving hormonal treatment for recurrences. Ten patients have been observed for from 1 month to 324 days without any treatment. Remission has lasted from one and a half to six months after discontinuation of treatment for four patients. This group includes three patients who had the combined hormonal and either gold or copper treatment and one patient who had only the hormonal treatment.

Absorption of Corticotropin by Lung.—Corticotropin (ACTH) aerosol was given by inhalation to six normal persons and three patients with bronchial asthma. The degree of absorption by the lung was determined by the lowering of the circulating eosinophils (Thorn's test). The number of circulating eosinophils was determined every hour for three or four hours after inhalation of corticotropin aerosols. The solution given by inhalation contained 32.5 mg. of corticotropin in 2 cc. of distilled water. The entire amount was given in a single dose. Oxygen under a pressure of 5 to 7 lb. (2.3 to 3.2 kg.) per square inch was used to vaporize the solution during inspiration. A valve prevented elimination of the aerosol during expiration. The response of the circulating eosinophils in all nine cases was similar to that obtained after intramuscular injection of corticotropin. The fewest circulating eosinophils were observed within the first and second hour after administration of corticotropin aerosols. The patients tolerated inhalation well, complaining only of transient moderate salivation.

Revue Médicale de Liège

6:677-708 (Oct. 15) 1951

Post-Transfusional Reactions and Compatibility Tests. P. Jossa.—p. 677.
*Eosinophilia and Diagnosis of Allergic Disorders. J. Lecomte.—p. 682.
Calcium-Phosphorus and Vitamin D Metabolism in Infants. R. Houet. —p. 686.

Eosinophilia and Diagnosis of Allergic Disorders.—Eosinophilia in the sense of formation and accumulation of more than 400 eosinophil cells in 1 cu. mm. of blood may be associated with all the disorders and processes of sensitization due to absorption of foreign proteins, such as asthma, hay fever, echinococcic cysts, allergic digestive disorders, attacks of urticaria Quincke's edema, Loeffler's syndrome, periarteritis nodosa pregnancy, helminthiasis, Hodgkin's disease, secondary carcinoma of the liver, scarlet fever, copper and benzene poisoning certain forms of tertiary syphilis, leprosy, and Duhring's disease. Eosinophilia may be even more pronounced in morbid o constitutional manifestations without any allergic component such as the familial high eosinophilia, Cazal's polyneuritis eosinophil leukemia, erythremia (Vaquez's disease), and certai types of severe cardiac decompensation. In anaphylactic shock i. e., on exposure to stress in Selye's meaning of the term, ther is no eosinophilia. Because of this particular inconsistency an because of the wide range of disorders associated with generalized eosinophilia of the circulating blood, the latter has n diagnostic value in allergic disorders. In experimental allergy th phenomenon of Arthus may be considered as a good exampl of an eosinophil reaction. In man, cell infiltration in acut localized allergic reactions that are not of bacterial origin ma be composed *occasionally of eosinophils produced in loco. Thi* eosinophilia may be of some diagnostic value as an allergi manifestation, if it is associated with a spasm of the smoot muscles, with mucous hypersecretion, or with sudden appearanc of edema. Generalized or localized eosinophilia is produced b molecules foreign to the organism, which at one time have antigenic properties but at another time do not have this function The presence of eosinophilia does not necessarily indicate a allergic reaction, since eosinophilia occurs also with othe conditions.

Revue du Rhumatisme, Paris

18:447-506 (Sept.) 1951. **Partial Index**

Morphology of Shoulder and Scapulohumeral Periarthritis. R. J Weissenbach and P. Pizon.—p. 447.
Remarks on "Articulations" of Vertebral Bodies and Significance o Term "Amphiarthrosis." J. Lacapère.—p. 456.
*Six Months of Use of Cortisone and Corticotropin (ACTH) at Rheumatological Center of Purpan. E. Roques, C. Darnaud, R. Bollinell and others.—p. 462.

Use of Cortisone and Corticotropin at Rheumatological Center—During a six-month period 70 patients with various rheumatic conditions were given short courses of treatment with cortisone and corticotropin, the supply of these drugs still being small. Cortisone was given first in doses of 200 to 300 mg. daily for one to three days, then in daily doses of 100 mg. until the maximum therapeutic effect was reached, and finally in daily maintenance doses of 75 mg. and occasionally 50 mg. for three to eight days. The dosage of corticotropin varied considerably because of variations in concentration and purity of the available preparations, but a daily dose of 100 mg. was administered in many cases and had to be maintained in order to obtain the desired effect. In the authors' limited experience, it seemed that in patients with polyarthritis rapid recurrences were observed less frequently than had been reported by other workers. Improvement of patients with recent chronic polyarthritis was obtained with a short course of treatment with cortisone and was definitely maintained for three months after discontinuation of the drug. Cortisone already is considered of practical importance in the treatment of chronic polyarthritis associated with little destruction of tissue. Chrysotherapy was combined with administration of cortisone in nine patients and with administration of corticotropin in one patient. Total doses of 1 gm. to 1.3 gm. of gold salt were given intramuscularly within 13 to 30 days, and were well tolerated under the protection afforded by the hormones. Corticotropin and cortisone were effective in one patient with myocardial infarction and in three patients with arteritis of Buerger's type, but on the other hand the risk of thromboembolism should not be underestimated. The authors agree that these drugs may precipitate endogenous tuberculous reinfection or aggravate an infectious process such as septic endocarditis, or produce pulmonary edema in patients with cardiac disorders of rheumatic origin.

Riforma Medica, Naples

65:893-916 (Aug. 18) 1951. **Partial Index**

Insulin-Resistance of Immunity Type: Demonstration of Anti-Insulin Serum Factors with Antibody Characteristics. V. De Filippis and A. Iannaccone.—p. 893.
*Methonium Compound in Absorption Delaying Solution in Therapy of Arterial Hypertension: Preliminary Report. V. Masini and P. Rossi.—p. 898.
Apparatus for Transfusion of Oxygenated Blood into Arteries. C. Sabbatini.—p. 900.

Pentamethonium Iodide in Hypertension.—Six patients with essential hypertension, 6 with hypertension and heart disease, 8 with malignant hypertension, and 10 with hypertension due to subacute and chronic nephritis were given intramuscularly 50 mg. of pentamethonium iodide in water solution. Responses occurred within 15 seconds after the injection. Systolic pressure dropped 60 mm. Hg and diastolic pressure 30 mm. Hg. The fall in blood pressure persisted five hours and reached its maximum after one hour. Pronounced side-effects, like dizziness and symptoms of fainting, occurred when the patient returned to a standing position. Subsequently, 50 mg. of pentamethonium iodide in a 20% concentration of polyvinyl pyrrolidone were given intramuscularly to the same patients. Systolic pressure fell 50 mm. Hg and diastolic pressure 25 mm. Hg. The hypotensive effect lasted six and one-half hours and reached its maximum one and one-half hours after the injection. Side-effects on arising occurred only in two patients. Best results were obtained in patients with essential hypertension associated with nephropathy and renal insufficiency, in whom the hypotensive effect sometimes lasted 48 hours. Electrocardiograms and blood flow recordings taken before and after the two injections showed no changes. Responses to the Hines and Brown test decreased after each of the two injections. The authors, comparing the results, suggest that intramuscular administration of pentamethonium iodide in a 20% concentration of polyvinyl pyrrolidone may become the treatment of choice for patients with hypertension. This preparation should be used with caution because it tends to accumulate in the organism, and glomerular filtrate probably decreases.

Scalpel, Brussels

40:1125-1154 (Oct. 6) 1951. **Partial Index**

*Treatment of Acute Penicillin-Resistant Osteomyelitis. P. Dewinne, P. Solbreux and J. Legros.—p. 1125.

Penicillin-Resistant Osteomyelitis.—The incidence of osteomyelitis has declined since 1945 because penicillin is widely used in conditions leading to it (such as furunculosis, bronchopneumonia, pyodermatitis) and in mild cases which are probably aborted before diagnosis can be established. Deaths resulting from osteomyelitis in children have disappeared in the authors' practice. The course of the disease has been greatly modified by prolonged use of penicillin in massive doses. Surgical intervention is no longer necessary even when necrosis has involved a large part of the diaphysis and sequestra are forming. Immobilization by plaster casts is still carried out, and hospitalization averages from three to four months. Patients have a slightly elevated temperature (37.2 to 37.7 C), beginning on the 8th or 10th day of treatment and continuing for three or four months. The authors suggest that this fever, which begins as a result of infection, may later be due to the processes of tissue repair accompanied by metabolic disturbances and the resorption of toxic material. Patients with slightly elevated temperature frequently seem to be clinically and radiologically cured by the sixth week of treatment. Cases that do not yield to penicillin alone may be cured by using aureomycin in addition. A 5-year-old child who had a Staphylococcus aureus infection received massive doses of penicillin. His general condition was good, but the osteomyelitis progressed until there was a Brodie's abscess near the elbow of the affected arm and extensive bony destruction of the diaphysis with fracture and beginning sequestration. Penicillin (800,000 units daily) was continued, but 400 mg. of aureomycin daily was given in addition. Three weeks later the abscess had disappeared and the bony structure of the diaphysis no longer appeared soft. Penicillin was continued at the rate of 800,000 units daily, but six weeks later the aureomycin was reduced from 400 mg. to 200 mg. daily, until treatment terminated. Five months after aureomycin was started, x-ray films showed a perfectly reconstituted cubitus. Aureomycin acts on pathogenic bacteria more rapidly than penicillin, thus preventing massive liberation of toxins that dissolve bony tissue. This bacteriostatic action permits the leukocytes to sterilize the purulent liquid surrounding the bone and the sequestrum, which is then in an aseptic field and acts like a bony graft, being recolonized by the healthy bone. Aureomycin thus replaces surgery, which was formerly indispensable in treatment of osteomyelitis.

Schweizerische medizinische Wochenschrift, Basel

81:937-960 (Sept. 29) 1951

Experiences with Cortisone and Corticotropin (ACTH) Therapy in Primary Chronic Polyarthritis. A. Böni and A. Jung.—p. 937.
*Therapy of Rheumatic Diseases with Hormones. H. Doebeli.—p. 942.
Cortisone in Treatment of Keratitis Disciformis and of Herpes Simplex Corneae. R. Moser.—p. 945.
Temporal Arteritis: Case Treated with Cortisone. J. P. Doret, J. L. Roux and A. Rywlin.—p. 946.
Significance of Adrenal Cortex in Allergic Processes. F. Gross and R. Meier.—p. 949.
Effect of Cortisone on Urinary Elimination of Amino Acids. G. Milhaud and J. P. Doret.—p. 953.

Hormone Therapy of Rheumatic Diseases.—In 1949 Lewin and Wassen reported that they obtained favorable results with the combined administration of desoxycorticosterone acetate and large doses of vitamin C in treatment of patients with chronic polyarthritis. Investigators who subsequently tried this treatment reported contradictory results. Doebeli tried this combination in 80 patients and cortisone in 17 patients with various rheumatic disorders of an average duration of 10 years. Desoxycorticosterone acetate and vitamin C rarely had any effect in chronic polyarthritis, in spondylitis deformans, or in arthritic and neuritic manifestations of gouty arthritis. Cortisone, on the other hand, had a surprising effect in chronic polyarthritis as long as its administration was continued. When treatment was interrupted, the original symptoms recurred, usually within two weeks. Many patients had an exacerbation following cessation of treatment with cortisone. Similar effects were observed in spondylitis deformans. In chronic relapsing gouty arthritis, however, remissions persisted for long periods even after cortisone treatment was discontinued. When tried in the same patients, cortisone was definitely superior to the combination of desoxycorticosterone and vitamin C. Even treatment with gold preparations was more effective than treatment with desoxycorticosterone and vitamin C. However, if this combination therapy is followed by the administration of gold salts, they may become active when they were not before. Gold preparations have a much slower and weaker effect than cortisone, but their therapeutic effect is more lasting.

Settimana Medica, Florence

39:333-352 (July 15) 1951

Studies on Biological Action of Mineral Water "Sorgente Panna." G. Coronedi, G. Guidi and R. Marri.—p. 333.
*Clinical Experiences with Ethyl Biscoumacetate (Tromexan® Ethyl Acetate). V. Debenedetti and G. Limone.—p. 339.
Case of Severe Hypoprothrombinemia Due to Bishydroxycoumarin (Dicumarol®). L. Tropeano.—p. 342.
*Thrombosis Due to Strain: Primary Thrombosis of Axillary and Subclavian Veins, with Observations on Two Cases. G. Micheli-Pellegrini and M. Rosselli.—p. 345.

Ethyl Biscoumacetate in Thromboembolic Disease.—Fifty-nine patients with thromboembolic disease, including myocardial infarction, phlebothrombosis and thrombophlebitis, pulmonary embolism, cerebral thrombosis, Buerger's disease and arteriosclerotic arteritis, coronary insufficiency, cardiac decompensation with pulmonary infarction, and septic endocarditis with thromboembolic complications, were treated with ethyl biscoumacetate (tromexan® ethyl acetate). Administration of 1,200 to 2,400 mg. in divided doses during the first 48 hours usually induces a therapeutically satisfactory prolongation of the prothrombin time. During the same time 12 patients were given 50 mg. of heparin every 4 to 6 hours. Prothrombin determinations were performed once or twice daily using thromboplastins prepared by the authors from brain and lung of rabbit. A prothrombin activity of 20 or 30% of normal was regarded as optimum for therapeutic purposes. Daily doses of 300 to 600 mg. (1 to 2 tablets) of ethyl biscoumacetate were sufficient to maintain this level. The treatment lasted from 11 to 142 days. Results were good in patients with myocardial infarction, phlebothrombosis, thrombophlebitis, pulmonary embolism, in one patient with cerebral thrombosis, and one patient with septic endocarditis. Hematuria and epistaxis occurred in two patients and were controlled by reducing or stopping administration of the drug. Gastrointestinal bleeding occurred in one patient, aged 69, to whom vitamin K was administered. Hematuria associated with bleeding from the mouth and the skin occurred in one patient whose condition was critical before treatment was begun. These data suggest that ethyl biscoumacetate may play an important part in anticoagulant therapy of thromboembolic disease if prothrombin times are determined accurately.

Thrombosis of Axillary and Subclavian Veins.—Thrombosis of the axillary and the subclavian veins caused by effort is reported in two healthy men, a student aged 20 and a delivery man aged 38. Both patients complained of pain in the right arm that appeared after a strain. Function of the arm was not impaired, temperature was normal, and physical findings were normal except for swelling and slight cyanosis in the arm. In both patients dilated superficial veins were observed over the anterior part of the chest, the axilla, and the shoulder. Despite the doctor's advice, the student continued his athletic activity. Four days after the first trauma, a rise in temperature associated with dyspnea and rusty sputum confined him to bed. His temperature returned to normal after 48 hours. Rusty sputum reappeared seven and nine days after the first trauma, suggesting pulmonary embolism. The student participated again in athletics and one month later was well. The second patient received repeated diathermy treatment, and after one month the arm was normal and all disturbance had disapppeared. The authors review extensively the literature and discuss the therapy of this rare entity. They suggest that anticoagulant therapy may be useful in preventing pulmonary embolism.

Thorax, London

6:209-342 (Sept.) 1951

Polythene Pack Operation for Pulmonary Tuberculosis. H. M. Davies, L. J. Temple and C. Stathatos.—p. 209.
Thoracoplasty Concomitant with Resection for Pulmonary Tuberculosis. J. K. B. Waddington.—p. 230.
Tuberculoma of Lung. E. N. Moyes.—p. 238.
*Avoidable Vascular Spread in Resection for Bronchial Carcinoma. J. A. Aylwin.—p. 250.
Comparison of Role of Bronchial Arteries in Bronchiectasis and in Experimental Ligation of Pulmonary Artery. F. B. Cockett and C. C. N. Vass.—p. 268.
Veins of Oesophagus. H. Butler.—p. 276.
Accuracy of Spirographic Recording at High Respiratory Rates. L. Bernstein and D. Mendel.—p. 297.
Subdiaphragmatic Haematocele Due to Pneumoperitoneum. E. G. W. Hoffstaedt.—p. 310.
Late Results in Transthoracic Herniotomies. T. C. Gertz, J. E. P. M. Regout and G. Thomsen.—p. 316.
Measurement of Blood Pressure in Oesophageal Varices. P. Allison. —p. 325.

Avoidable Vascular Spread in Carcinoma Resections.—Few of the 111 patients who had undergone pneumonectomies for bronchial carcinoma at the Thoracic Surgical Unit at Leeds before the end of 1949 are still alive. There are also indications that, although intrapericardial resection of bronchial carcinoma has reduced the incidence of local recurrence, it is not affecting survivals to the extent that might be expected from such an advance in treatment. Retrospective examination of the Leeds series had led to the belief that more practical attention might be paid to the role of the pulmonary veins in the spread of carcinoma to the rest of the body. Aylwin shows that erosion of veins in bronchial carcinoma is both common and serious, and contamination of the general circulation at operation should be anticipated by tying the pulmonary veins inside the pericardium before manipulating the tumor. Without this modification in technique all subsequent vascular deposits cannot be considered unavoidable. Massive malignant emboli during pneumonectomy are rare, but two cases are described, and it is suggested that smaller ones occur frequently but are unrecognized. In gastric carcinoma it is possible that a similar process occurs in the portal circulation, where prevention is simple with the thoracoabdominal approach. Results of surgical treatment of both bronchial and gastric carcinoma need to be improved despite the advance of radical resection, and the importance of vascular spread has been neglected in planning surgical technique.

Tubercle, London

32:185-208 (Sept.) 1951

Extrapleural Pneumothorax. D. Barlow.—p. 186.
Pulmonary Tuberculosis Amongst Displaced Persons. E. Posner.—p. 194.
Thiosemicarbazone (T. B. 1): Year's Experience of Its Use Alone and in Combination with PAS. R. Z. Ptaszynski and A. E. K. Salvi.—p. 197.

32:209-230 (Oct.) 1951

Tests for Streptomycin Sensitivity of M. Tuberculosis on Solid Medium. J. Fielding.—p. 210.
Currents of Action in Pulmonary Parenchyma (Preliminary Note). C. Xalabarder.—p. 214.
Thiosemicarbazone in Chemotherapy of Tuberculosis: Report of Pilot Trial Organized by the Research Committee of the British Tuberculosis Association.—p. 217.
Coincident Active Pulmonary Tuberculosis and Bronchial Carcinoma. B. Couts.—p. 223.

Zentralblatt für Gynäkologie, Leipzig

73:1507-1570 (No. 19) 1951. Partial Index

Menstrual Hygiene. D. Benthin.—p. 1512.
Clinical Experience with Use of Vaginal Tampons. M. Brey.—p. 1514.
Failure of Bone Marrow During Pregnancy. E. Fritze and G. Martius. —p. 1517.
*Diagnosis of Simultaneous Extrauterine and Intrauterine Pregnancy. T. K. Pütz.—p. 1522.
*Pulmonary Abscess in Puerperal Sepsis. A. Verhagen.—p. 1530.
*Therapy of Tetanus Following Criminal Abortion. G. Boerner.—p. 1533.

Simultaneous Extrauterine and Intrauterine Pregnancy.—Three cases of simultaneous extrauterine and intrauterine pregnancy are reported. In one case early surgical removal of the ectopic pregnancy on the right side made it possible for the intrauterine pregnancy to be carried to term, and a mature female infant was delivered spontaneously. In the other two cases the intrauterine pregnancy was aborted and the extrauterine pregnancy was then treated surgically. The author stresses the diagnostic value of the puncture of Douglas' pouch in such cases.

Pulmonary Abscess in Puerperal Sepsis.—Puerperal sepsis developed in a primipara, aged 21, and did not respond to sulfonamide and penicillin therapy. On the 23rd day after delivery several pulmonary emboli developed, which presumably originated from a pelvic venous thrombosis. Sputum examinations made subsequently revealed Bacterium coli, Bact. proteus, and Streptococcus viridans. Roentgenoscopy three weeks after the pulmonary embolism revealed a large opacity in the right lower lobe and a smaller one in the infraclavicular region. Since neither the sulfonamide nor penicillin therapy (over 5,000,000 units) seemed to be effective, treatment with aureomycin was begun (250 mg. eight times daily) and continued for 20 days (total dose of 40 gm.). At the end of treatment with aureomycin the temperature had become normal and the abscess had healed. The sputum, which had been profuse during the aureomycin therapy, rapidly decreased. Complete cure is ascribed to the aureomycin therapy.

Therapy of Tetanus Following Criminal Abortion.—In the case reported abortion had been induced during the seventh month of pregnancy. Tetanus resulted after an incubation period of only eight days. Treatment consisted in the total extirpation of the unopened uterus and administration of comparatively small doses of tetanus serum. The author stresses that the removal of the infected uterus is of vital importance, the serum therapy being only supportive.

BOOK REVIEWS

Tuberculosis Among Children and Adults. By J. Arthur Myers, M.D., Ph.D., Physician in Charge, Chest Clinic, Students' Health Service, University of Minnesota, Minneapolis. Introduction by Allen K. Krause, M.D. With chapters by O. Theron Clagett, M.D., F.A.C.S., and others. Third edition. Cloth. $12.50. Pp. 894, with 177 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

This volume covers tuberculosis with a completeness that leaves no phase of the disease untouched. It is organized into four principal parts: the first deals with tuberculosis in infancy; the second, with tuberculosis in childhood; the third, with tuberculosis among young adults; and the fourth, with recent progress in tuberculosis control. This takes up more than half of the text. The treatment of the subject gives equal emphasis to the clinical phases of tuberculosis, practical measures for its control, and research efforts to improve therapeutic handling. Extensive attention is given to new methods of treatment, particularly modern surgery and chemotherapy. The book is extensively documented, and each chapter has an excellent summary. The illustrations, including many roentgenograms, are adequate. As a reference book and a guide to the practicing physician, this treatise can be thoroughly recommended.

Diathermy: Short-Wave Therapy, Inductothermy, Epithermy, Long-Wave Therapy. By William Beaumont, M.R.C.S., L.R.C.P., Director of Physical Medicine, Westminster Hospital, London. Second edition. Cloth. 21s. Pp. 230, with 114 illustrations. H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1, 1951.

The physical principles of short wave and so-called conventional diathermy are dealt with in a readable and nonmathematical fashion. Because of the almost complete disappearance of the practice of "conventional diathermy," the discussion relating to this subject is more of historical interest than practical value. It is generally felt that there is no critical evidence to substantiate any effect of diathermy other than the thermal effect. One might question the soundness of the author's opinion that there is an "athermal action." Much of the text relating to clinical application considers methods of applying pad and air-spaced electrodes. Methods of applying conventional diathermy, an almost archaic practice, should have been replaced by discussion of microwave diathermy; however, the author feels that there is insufficient clinical evidence to make it of definite therapeutic value. The purpose of the second edition is to inform the physical therapist and the English physician seeking the diploma for medical practitioners of the advances in knowledge of the behavior and application of high frequency currents. This group will find the text a good source for part of the information they desire.

Diagnostic Standards and Classification of Tuberculosis. 1950 edition. Paper. Pp. 64. National Tuberculosis Association, 1790 Broadway, New York 19, 1950.

Need for a definite classification of tuberculosis was recognized early in this century. In 1904, Dr. Edward Livingston Trudeau suggested this need to the National Association for the Study and Prevention of Tuberculosis. There followed, through the intervening years, the formulation of the tentative standards, ending in their final adoption by the National Association in 1913. However, not until 1917 (during the early months of the Framington Health Demonstration) was the first edition of the Diagnostic Standards published. Through the ensuing years, eight other editions have been published; these include complete or partial revisions and several reprintings. In reviewing the various editions, one may follow the evolution of the present day methods of diagnosis and classification of pulmonary tuberculosis.

The ninth edition has undergone complete revision, so that current concepts are embodied, and a chapter on screening classification for mass roentgenographic surveys is added. The increasing use of mass chest surveys in industry, and cities and towns throughout the country has shown the need for a definite system of classification of the abnormalities noted on the films processed during these surveys. The classification for use in roentgen surveys should prove of great value. If followed in reporting the results of chest surveys, this would mean uniformity of reports and comparisons. In the chapter on the classification of tuberculosis, a section on the location of lesions has been added. This follows the Jackson and Huber terminology and classification of bronchopulmonary segments. Of greater interest, however, is the recognition given to the refinements in laboratory diagnoses by culture methods and the changes made in the clinical classification as a result of these refinements. The term "arrested," as used in this new terminology, differs considerably from that used in the old classification. Arrested as it is now used in the medical profession, will have to be discontinued, as patients may be classified as having arrested disease under the new terminology, even if they have an occasional positive sputum by smear. The term "inactive," as described in the new classification, requires six months of stability of lesions as shown by roentgenograms, absence of constitutional symptoms, and, in addition, negative sputum, including cultures or animal inoculation.

The new standards have introduced another change, in that the exercise requirement for clinical classification has been dropped. A separate section has been introduced on the exercise status. Although the exercise status of the patient plays no part in the clinical classification, it is to be indicated in the diagnosis. A chapter on vocational rehabilitation has been added. This points out the need for physicians to direct and prescribe the gradual return of the inactive patient to reemployment and normal living within the limits of his residual disability. The National Tubeculosis Association is to be congratulated on this fine piece of work. Their Standards have become so widely used and accepted throughout the world that it is imperative for all physicians who deal with tuberculosis to become acquainted with the terminology in the new edition of the Diagnostic Standards.

Leitfaden der Laparoskopie und Gastroskopie. Von H. Kalk, Prof. Dr. Med., leitender Arzt der inneren Abteilung des Stadtkrankenhauses Kassel, und W. Brühl, Dr. Med. habil., Chefarzt der inneren Abteilung des Paulinehospitals Arolsen. Unter Mitwirkung von W. Burgmann, Dr. Med., Chefarzt des Sanatoriums "Dr. Schorlemmer" Bad Godesberg. Cloth. 27 marks. Pp. 159, with 82 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The authors describe their technique with clarity in this booklet. The first two-thirds of the book is devoted to laparoscopy. The authors call attention to indications and contraindications, note the pitfalls that may be present and tell how to avoid them, and describe their instrumentarium. All this is clearly done, and the reader feels that he can carry out the procedures fairly well, especially after the suggested initial attempts on a cadaver. The accurate interpretation of what one sees requires practice and experience. The following paragraph taken from page 38, should have been printed in heavy black print, so that it would not be overlooked. "The patient must be carefully observed after the procedure [laparoscopy] to be on the alert for signs of hemorrhage or emphysema of the skin. The patient should be kept at bed rest for one or two days after an uncomplicated case." In other words laparoscopy is not an office procedure. The authors claimed to have gained a surprising amount of knowledge by use of the laparoscope.

The booklet is well illustrated, with many colored pictures obviously painted from observation rather than from actual color photographs. Although the section on laparoscopy is well presented, the value of the procedure is limited. The section on gastroscopy is equally interesting, and here, the authors are on firmer, better explored, ground. The book is well written in simple German; the printing is excellent, and the text is well arranged and conveniently divided and indexed.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

herpes simplex, the patient is a carrier, and the attacks result when skin resistance is lowered by infection or undue reaction to drugs or foods. Every effort, including obtaining of a painstaking history, a search for foci of infection, and allergy studies, should be made to determine the cause. The treatment, in the meantime, consists of a diet elimination regimen, the administration of ephedrine, calcium, or antihistaminic agents, and the application of soothing lotions or ointments.

LATENT BLOOD DYSCRASIA

TO THE EDITOR:—*A young white woman has for years had a purulent inflammation of the gingiva at the margin next to the teeth and, in addition, a bleeding tendency after the slightest touch; tooth brushing causes profuse bleeding of short duration. There seems to be a worsening during pregnancy. Recently there has been a local tissue growth near one tooth; this disappears after it is touched with silver nitrate, but recurs soon afterward. There is a strong tendency to dental caries, but, owing to frequent care, the teeth are in good condition. Causes such as tartar or shortage of vitamins have been eliminated. Results of general physical and blood examination are normal. Is there any effectual therapy?*

M.D., Holland.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—One is led to suspect from the careful history and clinical description that a systemic background of blood dyscrasia might be latent and might become obvious later. Apparently pregnancy is an aggravating factor. On the other hand, in spite of the apparent care taken in restoring the carious teeth and in scaling the teeth, very careful checking for local irritation is indicated. Improper contour of dental restorations and improperly finished gingival margins of fillings may produce continuous and chronic gingivitis. Thorough local scaling and prophylaxis have cured severe chronic inflammation of the gingiva in many cases.

ANSWER.—Marked and persistent bleeding of the gingival tissue is associated with chronic gingivitis and chronic Vincent's infection. The chronic gingivitis is frequently due to deposits of calculus in the gingival sulcus and may be influenced by traumatic occlusion, food impaction, and, in some cases, altered gonadal hormonal activity. Exacerbations associated with pregnancy are not unusual. In some cases of gingivitis associated with pregnancy, granuloma pyogenicum occurs on the gingiva as small vascular tumors.

Acute Vincent's infection becomes chronic when the condition is not treated or is improperly treated. Marked gingival hemorrhage is frequently a symptom. The gingival margin is ecrotic and gives the appearance of accumulated exudate. This likewise associated with the presence of subgingival calculus and traumatic occlusion.

Thorough subgingival scaling and polishing, intensive brushing, and adjustment of occlusion usually result in control if there is no underlying periodontitis.

TREATMENT OF STERILE PLEURAL EFFUSION

TO THE EDITOR:—*Given a pleural effusion, from which no organism can be recovered, in an adult otherwise in good health, what is the treatment? If* p-*aminosalicylic acid and streptomycin are indicated, for how long and in what dosage should they be given?* *M.D., New York.*

ANSWER.—Assuming there is no evidence of mediastinal lymphoma, metastatic malignancy, or heart disease, it is a reasonable assumption that the pleural effusion is tuberculous in origin. So long as definite organisms have not been recovered from the pleural fluid, sputum, or gastric washings, and, as long as the pleural fluid remains serous, repeated aspiration as necessary, is acceptable treatment. On the assumption that the process is tuberculous, *p*-aminosalicylic acid, 2 gm. every two hours for five doses daily, may be used. There is considerable difference of opinion as to the dosage of streptomycin in a case such as this. From 0.5 gm. every other day to 1 gm. per day is the range employed by various clinicians. Duration of drug therapy will have to be guided by the patient's clinical course.

DEVIATED SEPTUM IN A CHILD

TO THE EDITOR:—*A boy, 9 years old, has a smooth deflection of the nasal septum and a low grade chronic infection of the antrum. There is 95% blocking. This patient is too young to consider submucous resection. Is there any other procedure that might be used? I have in mind a fracture of the septum toward the midline. Is this feasible?* *M.D., Florida.*

ANSWER.—The presence of a pronounced deflection of the nasal septum in a 9-year-old child does not necessarily constitute an indication for immediate correction. The problem should not be thought of in terms of correcting an anatomic deformity, nor should the age of the patient be a deciding factor. Unless the deflected septum is accompanied by troublesome nasosinal and systemic symptoms, surgical intervention should not be considered until a regimen of conservative medical therapy has been found ineffective. Even moderate improvement should encourage the continuation of such a program. Submucous resection of the septum should, however, be considered in the event of disturbed respiration, inadequate paranasal sinus ventilation and drainage, and, in the case of this child, the persistence of the chronic maxillary sinus infection, despite adequate medical attention over a period of months. Fracture of the septum toward the midline is inadvisable.

PITYRIASIS RUBRA PILARIS

TO THE EDITOR:—*A patient with pityriasis rubra pilaris ha been treated with high doses of vitamin A, x-ray therapy, and injections of vitamin B plus liver, with no improvement. Itching and nervous tension have been the most troublesom symptoms. What is her prognosis? Is there any other type o therapy? Will this develop into a generalized exfoliativ dermatitis?* *Herbert F. Cowgill, M.D., Wadsworth, Ohio.*

ANSWER.—There are some cases in which pityriasis rubr pilaris shows improvement and even disappears after treatmen with vitamin A administered orally in large doses. Others respon to treatment only when the vitamin A is administered parenterally, and still others respond better to treatment wit butter ingested in large quantities. Experimental work with th steroids, cortisone and corticotropin (ACTH) indicate that, initially at any rate, the concomitant administration of these drug tends to enhance the beneficial effect of vitamin A. Only a few patients have received this treatment to date.

The condition in a number of cases does not respond to treatment of any kind. Many patients experience temporary remissions, but the tendency is for the disease to go on and on. There is little reason to expect the development of exfoliative dermatitis unless the topical measures used should produce irritation

DEXTRO-AMPHETAMINE SULFATE AND ARTERIOSCLEROSIS

TO THE EDITOR:—*What effect would 5 mg. of* d-*amphetamin (dexedrine®) sulfate daily have on a 67-year-old patient with generalized arteriosclerosis with mild hypertension—150 systolic, 100 diastolic, and at times 175/110?*

Louis Guggenheim, M.D., Los Angeles, Calif.

ANSWER.—As a rule, *d*-amphetamine (dexedrine®) sulfate in doses of 5 mg. will not significantly elevate either the systolic or the diastolic blood pressure. As far as is known, it has no specific effect on arteriosclerosis. It is often stated that *d*-amphetamine sulfate should be used cautiously in the treatment of patients who have hypertension and coronary disease or those who have had episodes of cerebral vascular disease. In such a case as described, this preparation should not be used merely to suppress the appetite for purposes of weight reduction or to make the patient feel a little better. On the other hand, if it is judged to be urgent and necessary to use this preparation for this patient, it would perhaps be best to test its effect on the blood pressure before allowing the patient to take it regularly. If the diastolic blood pressure is found not to be elevated more than 10 mm., it should be safe to use this agent, always assuming that it is very important to do so.

THE JOURNAL
of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 148, NO. 6 CHICAGO, ILLINOIS FEBRUARY 9, 1952

COPYRIGHT, 1952, BY AMERICAN MEDICAL ASSOCIATION

THE BALLISTOCARDIOGRAM IN CORONARY ARTERY DISEASE

Robert C. Taymor, M.D., Leon Pordy, M.D., Kenneth Chesky, M.D., Marvin Moser, M.D.
and
Arthur M. Master, M.D., New York

In the absence of a clear-cut history and definite physical findings, the diagnosis of coronary artery disease often becomes a difficult task for the clinician. In the search for supplementary objective evidence, various tests have been developed as aids in the diagnostic study of these patients. The electrocardiogram has been most widely employed for this purpose. However, the resting electrocardiogram is of value only when it shows abnormalities, and it has been well established that a large percentage of patients with coronary artery disease have normal resting electrocardiograms.[1] In 1929 Master and Oppenheimer[2] introduced a test for circulatory function based on the response of the blood pressure and pulse to standard exercise. Subsequently these standards of exercise were employed to determine the effect of exercise on the electrocardiogram in patients with angina pectoris.[3] Considerable experience has now been obtained in the use of the Master "two-step" exercise electrocardiogram, and it is of definite value as an aid in the diagnosis of coronary insufficiency.[1]

The ballistocardiogram is another useful test of cardiac function. Although it had been well established previously that movements of the body resulting from the ejection of blood from the heart could be recorded,[4] extensive investigation in this field awaited the development of a standard instrument by Starr and his coworkers.[5] In addition to working out the normal standards for the ballistocardiograms, Starr investigated the patterns found in various cardiac diseases.[6] He believed that an abnormal ballistocardiogram, despite an absence of other abnormal findings, had a serious prognosis as to the future development of heart disease.[7] The commonest abnormalities of the ballistocardiographic patterns that occurred were poor definition of the I wave, splitting of the J wave (late "M" form), prominence of the H wave (early "M" form) and low amplitude with poor definition of all wave characteristics.[6] Mathers and his associates, using the low-frequency, critically-damped ballistrocardiograph of Nickerson,[8] showed that the abnormal ballistocardiograms in patients with cardiovascular disease may improve towards normal as the clinical status of the patient improves.[9] In studies to determine the value of the ballistocardiogram in the diagnosis of coronary artery disease, Brown and others[10] found that over 90% of the patients with angina pectoris in their series had abnormalities of the ballistocardiogram. On the other hand, the results obtained by Makinson,[11] applying a modification of the Master "two-step" exercise test to the ballistocardiogram, were inconclusive.

All of the preceding studies were performed on the table type of ballistocardiograph which required an expensive and bulky apparatus and greatly limited extensive

---

From the Cardiographic Laboratories, The Mount Sinai Hospital. Dr. Moser is a trainee of The National Heart Institute. Miss Iris Kanner provided technical assistance in this work.

1. Master, A. M.: Two-Step Exercise Electrocardiogram: Test for Coronary Insufficiency, Ann. Int. Med. **32**: 842, 1950.
2. Master, A. M., and Oppenheimer, E. T.: Simple Exercise Tolerance Test for Circulatory Efficiency with Standard Tables for Normal Individuals, Am. J. M. Sc. **177**: 223, 1929.
3. Master, A. M., and Jaffe, H. L.: Electrocardiographic Changes After Exercise in Angina Pectoris, J. Mt. Sinai Hosp. **7**: 629, 1941.
4. Gordon, J. W.: On Certain Molar Movements of Human Body Produced by Circulation of Blood, J. Anat. & Physiol. **11**: 533, 1877. Henderson, Y.: The Mass-Movements of the Circulation as Shown by a Recoil Curve, Am. J. Physiol. **14**: 287, 1905.
5. Starr, I.; Rawson, A. J.; Schroeder, H. A., and Joseph, N. R.: Studies on Estimation of Cardiac Output in Man, and of Abnormalities in Cardiac Function, from Heart's Recoil and Bloo[illegible] Am. J. Physiol. **127**: 1, 1939.
6. Starr, I., and Schroeder, H. A.: [illegible] Standards, Abnormalities Commonly Found in Diseases of Heart and Circulation, and Their Significance, J. Clin. Invest. **1**[illegible]
7. Starr, I.: On Later Development of Heart Disease in Apparently Healthy Persons with Abnormal Ballistocardiograms: 8- to 10-Year After-Histories of 90 Persons over 40 Years of Age, Am. J. M. Sc. **214**: 233, 1947.
8. Nickerson, J. L., and Curtis, H. J.: Design of Ballistocardiograph, Am. J. Physiol. **142**: 1, 1944.
9. Mathers, J. A. L.; Nickerson, J. L.; Fleming, T. C., and Patterson, M. C.: Abnormal Ballistocardiographic Patterns in Cardiovascular Disease as Recorded with the Low-Frequency, Critically-Damped Ballistocardiograph, Am. Heart J. **40**: 390, 1950.
10. Brown, H. R., Jr.; Hoffman, M. J., and de Lalla, V., Jr.: Ballistocardiographic Findings in Patients with Symptoms of Angina Pectoris, Circulation **1**: 132, 1950.
11. Makinson, D. H.: Changes in Ballistocardiogram After Exercise in Normal and Abnormal Subjects, Circulation **2**: 186, 1950.

investigation. In 1949, Dock and Taubman [12] introduced a simple instrument that recorded the ballistocardiogram directly from the body. Although accurate quantitative studies of the ballistocardiogram are difficult to obtain by this method, the records produced are qualitatively similar to those recorded by the more complicated instruments. The simpler machine, also, is readily adaptable to clinical application. It was considered desirable to evaluate this simplified ballistocardiograph for use in clinical cardiology by studying a large series of patients with and without heart disease. The results in a series of normal persons [13] and a preliminary report of the findings in various cardiovascular diseases [14] will be reported separately. It was the purpose of this investigation to determine the value of the photoelectric ballistocardiograph in the diagnosis of coronary artery disease and to correlate the results with those of the Master "two-step" exercise electrocardiogram.

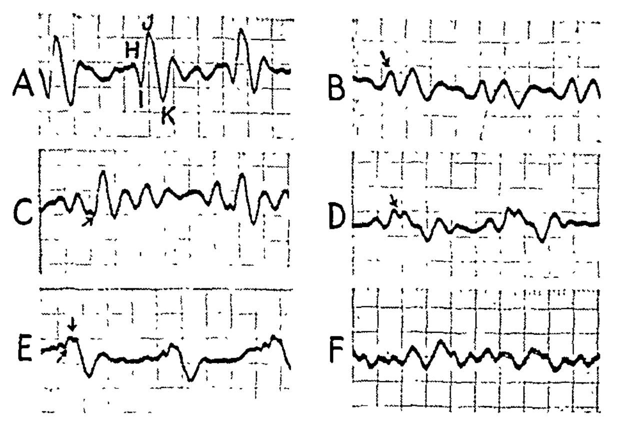


Fig. 1.—Variations of abnormal patterns of the ballistocardiogram. *A*, normal; *B*, prominent "H" wave; *C*, diminished "I" wave; *D*, notched "J" wave; *E*, small "I" and low, notched "J" waves; *F*, bizarre pattern.

MATERIALS AND METHODS

One hundred and ninety-five patients were studied by both the "two-step" exercise electrocardiogram and the ballistocardiogram. The group consisted of patients referred to this department for cardiac study and, also, hysicians and employees of the hospital who were underoing routine cardiovascular examinations. Each patient had a complete history and a physical examination which included cardiac fluoroscopy and a resting electrocardiogram. Only patients with resting electrocardiograms interpreted as normal were included in this investigation. Since the peripheral vascular components of hypertension can influence the ballistocardiogram,[14] hypertensive patients were excluded from this study. After a resting electrocardiogram and ballistocardiogram were recorded, the patients were exercised according to the standard technique of the Master "two-step" exercise electrocardiographic test. If the single "two-step" test was negative, the double "two-step" test was carried out. The electrocardiogram and, in most cases, the ballistocardiogram were recorded after exercise. The method and interpretation of the "two-step" electrocardiographic test [1] and the technique of recording the ballistocardiogram [13] hav been described elsewhere. Interpretation of the ballisto cardiogram was based only on the qualitative appearanc of the component waves. The ballistocardiographic pat tern was examined for amplitude of the component wave and for the presence of slurring or notching. Figure 1 illustrates a normal ballistocardiogram. The abnormali ties encountered varied from alterations in the I wav to completely bizarre records with no distinguishabl wave forms (Fig. 1*B-F*). A record was considered t be normal if no abnormalities were encountered regularl in any phase of respiration. The occasional irregular oc currence of an abnormal pattern in the record was n considered to be significant, since such extraneous facto as slight movement of the patient, will distort the ballist cardiogram. If the pattern in every or any one phase respiration was predominantly abnormal, the ballist cardiogram was interpreted as abnormal. A borderli ballistocardiogram was one in which there was o casional, but regularly occurring, diminution of I wa amplitude in any one phase of respiration. If the reco was normal before and abnormal after exercise (Fig. 2 the patient was considered to have an abnormal ballist cardiogram.

For purposes of reporting, the patients have be divided into three main groups: those with negati Master double "two-step" electrocardiograms, those wi positive "two-step" electrocardiograms, and those wi borderline "two-step" tests. Each group will be discuss separately. Of the 113 patients with negative doub "two-step" tests, there were 91 men and 22 women. T oldest was 78 years of age and the youngest 22. Sixt two patients were under the age of 50. Ninety-seven the patients in this group had no symptoms or physic findings suggestive of cardiovascular disease and we considered as having normal histories. Twelve had aty cal or very mild symptoms suggestive of heart diseas such as vague precordial pain, and were classified having atypical histories. Four patients had defini symptoms or other evidence of cardiac disease and we classified as those having typical histories.

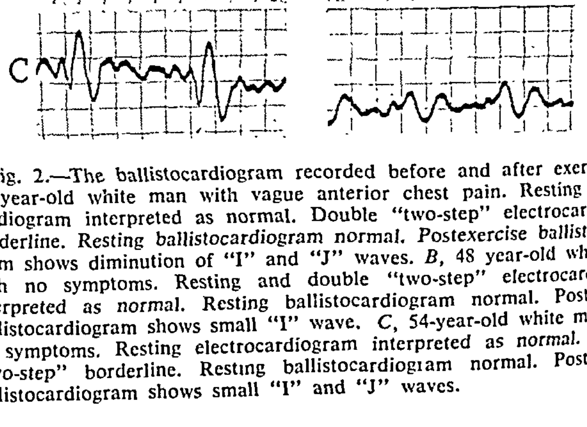


Fig. 2.—The ballistocardiogram recorded before and after exercise. 50 year-old white man with vague anterior chest pain. Resting elect cardiogram interpreted as normal. Double "two-step" electrocardiogr borderline. Resting ballistocardiogram normal. Postexercise ballistocard gram shows diminution of "I" and "J" waves. *B*, 48 year-old white m with no symptoms. Resting and double "two-step" electrocardiogr interpreted as *normal*. Resting ballistocardiogram normal. Postexerc ballistocardiogram shows small "I" wave. *C*, 54-year-old white man wi no symptoms. Resting electrocardiogram interpreted as *normal*. Dou "two-step" borderline. Resting ballistocardiogram normal. Postexerc ballistocardiogram shows small "I" and "J" waves.

---

[12] Dock, W., and Taubman, F.: Some Technics for Recording Ballistocardiogram Directly From Body, Am. J. Med. **7**: 751, 1949.

[13] Pordy, L.; Taymor, R. C.; Moser, M.; Chesky, K., and Master, A. M.: Clinical Evaluation of Ballistocardiogram: I. Normal Subjects, Am. Heart J. **42**: 321, 1951.

[14] Chesky, K.; Moser, M.; Taymor, R. C.; Pordy, L., and Master, A. M:. Clinical Evaluation of Ballistocardiogram: II. Heart Disease—Hypertension, Angina Pectoris, and Myocardial Infarction, Am. Heart J. **42**: 328, 1951.

There were 75 patients with positive "two-step" tests, 50 men and 25 women. Sixteen of the group had positive single "two-step" tests, and the remainder had positive double "two-step" tests. The ages ranged from 29 to 73, with 24 patients under the age of 50. Fifty-eight patients had typical histories of heart disease, of whom 50 had angina pectoris, 5 had had previous episodes of coronary insufficiency, 2 had old myocardial infarctions, and 1 had luetic aortitis. Fourteen patients had atypical histories, 1 had a history suggestive of neurocirculatory asthenia, and 2 had entirely negative histories and physical examinations.

TABLE 1.—*Patients with Negative "Two-Step" Tests*

					Exercise B C G							
		Resting B C G*			Resting B C G Normal		Resting B C G Abnormal		Resting B C G Borderline		Total	
Group	No.	N	A	B	N	A	N	A	A	B	Abnormal	Borderline
No symptoms	97	86	8	3	66	6	..	7	1	2	15	2
Atypical symptoms	12	5	7	..	3	2	..	7	..	..	9	..
Typical symptoms	4	1	3	..	..	..	1	2	..	..	3	..
Total	113	92	18	3	69	8	1	16	1	2	27	2

* N is Normal. A is Abnormal. B is Borderline. B C G is ballistocardiogram.

TABLE 2.—*Patients with Positive "Two-Step" Tests*

					Exercise B C G							
		Resting B C G*			Resting B C G Normal		Resting B C G Abnormal		Resting B C G Borderline		Total	
Group	No.	N	A	B	N	A	N	A	A	B	Abnormal	Borderline
Typical history	58	6	48	4	3	3	..	18	3	..	54	1
Atypical history	14	1	13	..	..	1	1	9	..	..	14	..
Neurocirculatory asthenia	1	1	..	..	1	..	..	..	..	..	..	..
No symptoms	2	1	1	..	..	1	..	1	..	..	2	..
Total	75	9	62	4	4	5	1	28	3	..	70	1

* N is Normal. A is Abnormal. B is Borderline. B C G is ballistocardiogram.

TABLE 3.—*Patients with Borderline "Two-Step" Tests*

					Exercise B C G							
		Resting B C G*			Resting B C G Normal		Resting B C G Abnormal		Resting B C G Borderline		Total	
Group	No.	N	A	B	A	B	A	B	A	B	Abnormal	Borderline
No symptoms	5	3	2	..	3	..	2	..	..	..	5	..
Atypical symptoms	1	1	..	..	..	1	..	..	..	..	..	1
Typical symptoms	1	..	..	1	..	..	..	..	1	..	1	..
Total	7	4	2	1	3	1	2	..	1	..	6	1

* N is Normal. A is Abnormal. B is Borderline. B C G is ballistocardiogram.

Six men and one woman had borderline double "two-step" tests. The age range was 38 to 54, with three patients under the age of 50. Five had normal histories, one an atypical history, and one a typical history of heart disease.

RESULTS

I. Patients with Negative Double "Two-Step" Tests (Table 1).—A. With Normal Histories: Of the 97 patients who were considered to be normal, 86 had normal ballistocardiograms while 8 had abnormal and 3 borderline ballistocardiograms at rest. Seventy-two of the patients with normal resting ballistocardiograms had records taken after exercise; 66 of these remained normal, and 6 became abnormal. Seven of the 8 with abnormal resting ballistocardiograms had postexercise records taken, and all remained abnormal. One of the patients with a borderline ballistocardiogram had an abnormal record after exercise, the other two remaining unchanged. Of the 15 patients with abnormal ballistocardiograms, at rest or after exercise, 9 were 50 years of age or older.

B. With Atypical Histories: In this group there were five patients with normal and seven with abnormal ballistocardiograms at rest. After exercise, three of the former remained normal, and two became abnormal. All seven of those with abnormal resting records had abnormal exercise ballistocardiograms. Only two of the abnormal records obtained in this group were in patients under the age of 50.

C. With Typical Histories: One normal and three abnormal resting ballistocardiograms were obtained in this group. Exercise ballistocardiograms were obtained only in those with abnormal records. Of these, two remained abnormal, and one became normal after exercise. All three abnormal records were obtained in patients who were 50 years or older.

Of one hundred and thirteen patients with negative double "two-step" exercise electrocardiogra[illegible] had normal resting ballistocardiogra[illegible] t [illegible] these became abnormal after exercise. Eighteen patients had abnormal resting ballistocardiograms, one of which normalized after exercise. Three showed borderline resting ballistocardiograms, and one of these became abnormal after exercise.

II. *Patients With Positive "Two-Step" Tests* (Table 2).—A. Typical Histories: There were 58 patients in this group. Six had normal resting ballistocardiograms. Forty-eight had abnormal records, and four were borderline. Three of the six patients with normal resting records had abnormal ballistocardiograms after exercise. Eighteen of those with abnormal records and three with borderline records had tracings taken after exercise, and all were abnormal. Thirty-six of the patients with abnormal ballistocardiograms, before and after exercise, were 50 years of age or older. Figure 3 illustrates a case with a positive double "two-step" test and an abnormal resting ballistocardiogram.

B. Atypical Histories: There were 14 patients in this group. One patient had a normal resting ballistocardiogram which became abnormal after exercise. Ten of the 13 with abnormal resting ballistocardiograms had records obtained after exercise, 9 remaining abnormal and 1 becoming normal. Only four of these patients were under the age of 50.

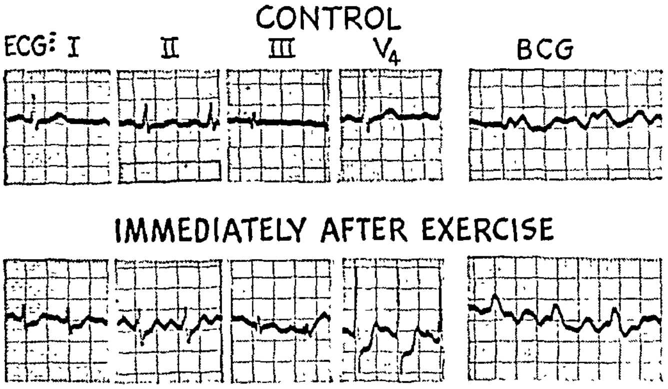


Fig. 3.—Records of M. F., aged 42, a male physician with angina pectoris. Electrocardiogram (12 leads) normal at rest. Control record shows electrocardiogram as normal and ballistocardiogram abnormal at rest. Record taken immediately after exercise shows S-T segment depressions (positive double "two-step" test) and ballistocardiogram still abnormal.

C. Neurocirculatory Asthenia: The one patient with neurocirculatory asthenia had a normal resting and exercise ballistocardiogram.

D. No Symptoms: There were two patients in this group, both over the age of 50. One had a normal and one had an abnormal ballistocardiogram at rest. Both were abnormal after exercise.

Of 75 patients with positive "two-step" exercise electrocardiograms, the resting ballistocardiogram was normal in 9, abnormal in 62, and borderline in 4. Five of the normal and three of the borderline cases became abnormal after exercise. One patient with an abnormal resting ballistocardiogram had a normal record after exercise.

III. *Patients With Borderline "Two-Step" Tests* (Table 3).—A. With Normal History: Three patients had normal resting ballistocardiograms all of which became abnormal after exercise. The two with abnormal resting tracings showed no change after exercise. Two of the abnormal records were in patients under the age of 50.

B. With Atypical History: The one patient in this group had a normal resting ballistocardiogram which became borderline after exercise.

C. With Typical History: This patient, age 42, had a *borderline resting ballistocardiogram* which became abnormal after exercise.

Of seven patients with borderline "two-step" exercise electrocardiograms, six had abnormal ballistocardiograms either before or after exercise.

COMMENT

Although we have compared the results of the ballistocardiogram with those of the electrocardiogram, it mus be remembered that each measures different physiological processes of the heart. While the electrocardiogram is a reflection of the manner and course of th excitation wave through the myocardium, the ballistocardiogram results from the ejection of blood from th heart during systole. The movements of the body tha are recorded are the recoils and impacts resulting fron the flow of blood through the great vessels. The character of the ballistocardiographic waves depends largel on cardiac ejection velocity and force,[15] and no direc correlation between the results of electrocardiograph and ballistocardiography should be expected. Pathological changes in the conduction pathways, or in the myocardium itself, may produce changes in the electrocardiogram. Even strategically placed small areas of damag may influence the electromotive field of the heart withou altering mechanical cardiac function. Conversely, th mechanical function may be sufficiently impaired to produce changes in the ballistocardiogram without enoug disturbances in myocardial excitation to alter the electrocardiogram. It is not unreasonable to assume that eithe one of these two physiological processes of the heart mechanical or electrical, may be altered first in the ver early phases of coronary artery disease. This differenc of results is not confined to early heart disease and although frank evidence of myocardial involvement ma exist by physical examination or electrocardiogram, th heart may still produce a normal ejection force. This ha been noted even after myocardial infarction.[16] The reserve of the heart may fall below normal only afte exercise, and such a patient would show a normal ballistocardiogram at rest, but an abnormal postexercis record. Therefore, the taking of a record before and afte standard exercise is necessary in the ballistocardiographic study of a patient, especially when the restin ballistocardiogram shows no abnormalities. In a smal percentage of patients with definite evidence of coronar artery disease in this series, the ballistocardiogram remained normal even after sufficient exercise was given t produce electrocardiographic changes. At the presen time, one can say no more than that such patients show no evidence of impairment of the systolic ejection force Further study of these cases is required to determin whether or not this finding has any prognostic value.

---

[15] Hamilton, W. F.; Dow, P., and Remington, J. W.: Relationship Between Cardiac Ejection Curve and Ballistocardiographic Forces, Am. J. [illegible] 557, 1945.

[16] [illegible], M.; Chesky, K.; Pordy, L.; Master, A. M., and Taymor, [illegible] Ballistocardiogram in Myocardial Infarction: Study of One Hundred [illegible] to be published.

In the group of patients with negative double "two-step" tests, 27 were observed to have abnormal ballistocardiograms at rest or after exercise. This is indicative of abnormal cardiac ejection and, in the absence of extracardiac factors and valvular disease, suggests myocardial involvement. However, the age of the patient must be considered before ascertaining the significance of these findings. Table 4 indicates the incidence of abnormal ballistocardiograms in patients above and below the age of 50 in each group. Only in the group with negative "two-step" tests is there any marked difference of percentage of abnormal records in the two age groups. Although the number of patients in the younger age group is slightly higher, there is a 2: 1 preponderance of abnormal records in the older age group. Since the incidence of undetected coronary artery disease increases with age, this finding might be expected. However, the changes in cardiac ejection force producing an abnormal ballistocardiogram in the older age group may be a "physiological" process of aging and hold no prognostic import when other evidence of heart disease is lacking. In the younger age group, on the other hand, the abnormal ballistocardiogram is of more significance and probably indicates abnormal cardiac function due to impending clinical heart disease. Follow-up studies of all these patients will be necessary to ascertain the prognostic significance of the ballistocardiogram.

TABLE 4.—*Age of Patients with Abnormal Ballistocardiograms*

	Patients Under Age 50		Patients Age 50 and Older	
Group	No.	No. Abnormal	No.	No. Abnormal
Negative "two-step"	62	8	51	19
Positive "two-step"	24	22	51	48
Borderline "two-step"	3	3	4	3
Total	89	33	106	70

Over 90% of the patients with normal resting electrocardiograms, positive "two-step" tests, and diagnoses of organic heart disease had abnormal ballistocardiograms. This finding supports the value of the ballistocardiogram as a diagnostic tool in coronary artery disease. However, since almost 10% of these patients had normal records, even after exercise, a normal ballistocardiogram alone is not sufficient to rule out heart disease. The procedure should be combined with a careful history, physical examination, and other tests such as the electrocardiogram and "two-step" test. It should be pointed out that there is no evidence to indicate that either the ballistocardiogram or the "two-step" exercise electrocardiogram is superior to the other. In a few cases of coronary disease the ballistocardiogram was abnormal while the "two-step" test was negative; in others the reverse was true.

It is interesting to note that two patients with abnormal resting ballistocardiograms showed normal records after exercise. This has been observed by others,[11] but its significance is not clearly understood. It may be due to the ability of the heart, despite the presence of coronary artery disease, to improve its systolic ejection force with exercise. The vasodilatation of the peripheral vessels which accompanies exercise may exert an influence on the ballistocardiogram also to alter the pattern towards normal.

CONCLUSIONS

1. While the electrocardiogram is a measure of the electromotive field of the heart, the ballistocardiogram reflects the force and velocity of cardiac ejection. Since two entirely different processes are involved, it is not necessary to expect a 1: 1 correlation between the results of the electrocardiogram and the ballistocardiogram in heart disease, especially in the early pathological phases of heart disease.

2. Since, even in the presence of coronary artery disease, cardiac ejection force may be impaired only after exertion, the ballistocardiogram should be recorded after standard exercise if the resting record is normal.

3. The incidence of abnormal ballistocardiograms without other evidence of heart disease is greater in patients 50 years of age or older, but this may be associated with other "physiological" aging processes and not be of prognostic significance. In the younger age group, an abnormal ballistocardiogram probably is of greater significance in respect to abnormal cardiac function. Follow-up studies are required to ascertain the full meaning of such findings.

4. The ballistocardiogram was found to be abnormal in 93% of the patients with angina pectoris and will be a useful tool as an aid in the diagnosis of coronary artery disease, but it should be used in conjunction with a careful history, physical examination, and electrocardiographic studies.

SUMMARY

1. The ballistocardiographic findings in 195 cases are presented and correlated with results of the Master "two-step" exercise electrocardiogram. The ballistocardiograms were recorded by means of a modified Dock photoelectric instrument.

2. Twenty-seven patients (23%) of 113 with negative "two-step" electrocardiographic tests had abnormal ballistocardiograms either at rest or after standard exercise. Seventy (93%) of 75 with positive "two-step" tests had abnormal ballistocardiograms, and 6 out of 7 with borderline "two-step" tests had abnormal records.

3. The significance of an abnormal ballistocardiogram and the influence of age on the findings are discussed.

4. The ballistocardiogram is presented as a diagnostic aid in coronary artery disease.

20 Broome Ave., Atlantic Beach, L. I., N. Y. (Dr. Taymor).

Differentiation of Mammary Duct Ectasia from Carcinoma.—The importance of the disease "mammary-duct ectasia" depends on the fact that it may present a clinical picture identical with carcinoma of the breast and betray the surgeon into doing an unnecessary radical mastectomy. . . . It is impossible to distinguish the two diseases by clinical examination. When mammary-duct ectasia has progressed to the stage in which inflammatory changes and consequent fibrosis have produced a tumor, the clinical picture may have all the features of carcinoma. The tumor is firm, poorly circumscribed, and, like a carcinoma, relatively fixed in the breast tissue that surrounds it. Retraction signs, including dimpling of the skin over the tumor, distortion of the contour of the breast, and retraction of the nipple, are regularly present. Axillary lymph nodes, enlarged as the result of inflammatory changes, are indistinguishable from lymph nodes containing metastasis.—C. D. Haagensen, M.D., Mammary-Duct Ectasia, *Cancer*, July, 1951.

FATAL INTERNAL INJURIES WITHOUT ASSOCIATED EXTERNAL MARKS

Frank R. Dutra, M.D., Cincinnati

In the investigation of deaths that have occurred unexpectedly and without reliable witnesses, autopsies not infrequently disclose cases in which unsuspected injuries were the proximal cause of death, even though there were no evidences of injury on the surface of the victim's body. Furthermore, the bodies of persons known to have died of traumatic injuries often bear insignificant or no external signs resulting from the fatal violence. It is probable that each year many unexpected or sudden deaths not due to natural causes are ascribed to such causes by coroners or attending physicians. Complete investigations, including medicolegal autopsies, doubtless would prove that the greatest proportion of these improperly certified fatalities were caused by injuries resulting from blunt force. Included in this group would be some instances in which beneficiaries had been deprived of insurance benefits because the traumatic nature of the death had not been recognized. In addition, a significant but inestimable number of homicides are undetected when inquiry is blighted by premature certification that death resulted from natural causes.

The importance of improving the accuracy of death certificates in cases of this type is obvious: justification of accident insurance claims would be established in some instances, public welfare would be protected by detection of homicides, and vital statistics would be rendered more accurate. The increased validity of vital statistics doubtless would be reflected most appreciably in two categories; i. e., the death rate from diseases of the cardiovascular system, to which most deaths of the kind being discussed are now attributed, would tend to diminish, while the number of deaths ascribed to accidents would increase. It is also likely that there would be some increase in the number of deaths established as having resulted from homicide and possibly from suicide. To emplify and substantiate the previous statements, a few ses have been selected. In some instances the force had een applied to the head, in others to the chest, and in some to the abdomen. Occasionally, a death of the type under discussion results from violence to an extremity, and one case of that type is also included.

REPORT OF CASES

Deaths Due to Injuries of the Head. CASE 1.—Late one evening, a 36-year-old white man was heard arriving home, and shortly thereafter sounds from his room indicated that he was having difficulty in breathing. He was found to be in a coma, and within an hour after his distress was noted, he had a convulsion and died. A physician who was called stated that he believed the death had resulted either from natural causes or from acute alcoholism. Early the next morning, a man went to the police and stated that on the preceding evening he had knocked the dead man to the pavement during an altercation.

A medicolegal autopsy revealed a superficial abrasion of the skin over the lateral aspect of the right arm in an area 1.5 by 0.4 in. (3.8 by 1.0 cm.); there were no other external marks on the head or body. Reflection of the scalp revealed a fracture of the skull extending from the region of the right temple upward and backward for 4.5 in. (11.4 cm.), while another fracture extended upward and forward from the right temple for 2 in. (5.1 cm.). Removal of the calvarium disclosed 4 oz. (125 cc.) of partially clotted blood between the skull and the dura mater, so that the brain was severely compressed (Fig. 1). The cause of death was acute epidural hemorrhage resulting from fractures of the skull sustained when the head forcibly contacted a rounded or flat surface.

CASE 2.—A 26-year-old woman was observed to fall backward out of a swing, striking her head on a concrete surface. She was unconscious immediately after the blow and did not regain consciousness before she died two days later. When the exterior of the body was observed on the autopsy table, there was a small bruise on the inner surface of the left arm. No other marks were present on the surface of the body. Reflection of the scalp revealed hemorrhage in the tissues over the back of the head. A fracture of the skull extended from the top of the head downward and backward to the base of the skull. The brain showed extensive damage, especially in the regions of the frontal lobes, which were lacerated and hemorrhagic as a result of a contrecoup (Fig. 2). The cause of death was hemorrhages and lacerations of the brain and fracture of the skull, due to a fall from a swing.

Death Due to Injuries of the Chest. CASE 3.—A night watchman in a veneer mill was found dead one morning with severa crates of veneer, each weighing approximately 200 lb. (91 kg. lying over his body. The body was found in a part of the mill tha was not on the watchman's prescribed route. As a part of the investigation, an autopsy was performed. The skin over the lef upper arm and shoulder showed many minute bright red hemorrhagic petechiae. There were no other marks on the surface o the body, but palpation of the chest indicated that possibly some ribs were fractured. When the body was opened, it was found that six ribs on each side were fractured, with considerable associated intrathoracic hemorrhage. In addition, there were compression fractures of the first and fourth lumbar vertebrae and a fracture of the pelvis.

Compression fractures of the type found in this body resul from hyperflexion of the trunk, and although officials of the veneer mill stated that the crates were piled in such a fashion tha they would not accidentally fall on anyone, there can be little question that this death resulted from the fall of the crates. The possibilities that the watchman had accidentally pulled the crates over on himself in attempting to climb onto them, or even that they had been pushed on him, could not, of course, be excluded by the examination. The cause of death was bilatera hemothorax due to crushing injuries of the chest, fractures o two vertebrae, of several ribs, and of the pelvis.

Death Due to Injuries of the Abdomen. Case 4.—One morning a 60-year-old man was found dead in his bed. External examination of the body revealed no marks, and the skin over the abdomen was not bruised. When the abdomen was opened nearly 2 qt. (2 liters) of blood were found in the peritoneal cavity and a laceration almost completely divided the spleen into two equal fragments. The police determined that this man had been kicked in the abdomen during an altercation in a tavern on the evening before he was found dead. The cause of death was hemoperitoneum from a ruptured spleen, following blunt-force injury to the abdomen.

Death Due to Injuries of an Extremity. CASE 5.—A 37-year old woman was struck in the thigh by the fender of an automobile. She had considerable pain in the leg and was not as active as usual for several days. On the fourth day after the injury, she complained of severe pain in the chest, and a few minutes later she died suddenly. Autopsy revealed a mass of clotted blood in the left femoral vein, and there was a moderate amount of hemorrhage in the muscle and fat immediately adjacent to this vein. In the right pulmonary artery was a coiled soft embolus (Fig. 3), which had broken loose from a thrombus in the

---

From the Coroner's Office of Hamilton County, Ohio, and the Kettering Laboratory in the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati.

vein of the left thigh. The cause of death was injury of the left leg, with resulting thrombosis of the left femoral vein and massive pulmonary embolism.

Incomplete perusal of the files from the Coroner's Office of Hamilton County has revealed that at least 11 additional traumatic deaths without significant external evidences have occurred during the last four years. One of these was due to a broken neck with associated injury of the spinal cord; this man had been found dying on a sidewalk, and the manner in which his injuries had been sustained was never determined. Three deaths were caused by chest injuries, including a fractured thoracic vertebra in one case, and these were believed to have resulted from "hit-and-skip" automobile accidents. One death followed a kick that ruptured the small intestine, and the others resulted from injuries of the head.

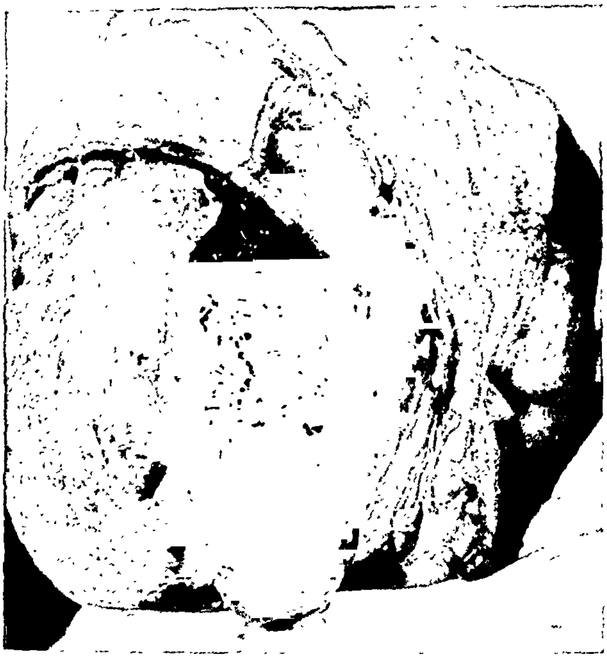


Fig. 1 (Case 1).—Clotted blood pressing on membranes over the brain. Injuries resulted when the head struck the pavement after a blow to the face.

COMMENT

All the deaths that have been discussed resulted from injuries caused by blunt force. Deaths from penetrating injuries, unaccompanied by obvious external marks, are also fairly common. Stab wounds of the head made by slender instruments, such as ice picks or knives with thin blades, often bleed little externally and may be unsuspected until the interior of the skull is examined. Wounds made by the entrance of bullets, particularly projectiles of small caliber, also may be unobserved, even during a careful examination of the scalp. In addition, bullets sometimes enter the body through one of its natural orifices and do not produce injuries of the exterior. In one such case a bullet entered the mouth of a screaming woman and first penetrated the tissues in the back of her throat. In this case it is notable that the bleeding from the mouth was ascribed to natural causes until an autopsy revealed the true cause of the hemorrhage.[1] Several cases have been observed by others [2] in which bullets entered the head through open eyes, and when the eyelids were closed there was no evidence of the gunshot wound. The bodies of pedestrians who have been killed when struck by motor vehicles frequently have few external marks to reflect severe internal injuries, a fact that must be responsible for nonrecognition of some unwitnessed "hit-and-skip" fatalities each year.

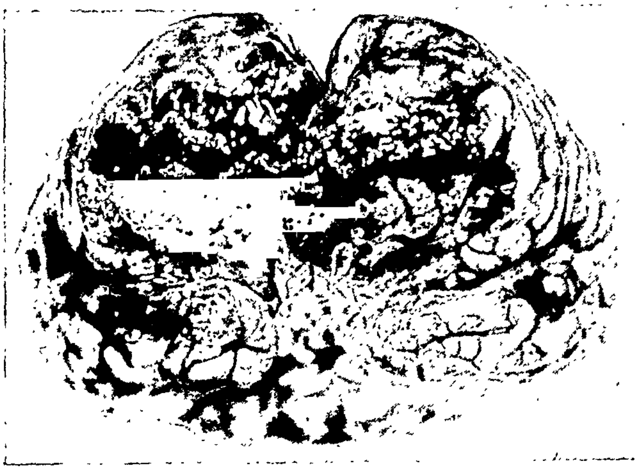


Fig. 2 (Case 2).—Contrecoup injuries of the frontal lobes of the brain, with hemorrhages and lacerations following a backward fall to a concrete surface.

When the surface of the body of a victim of traumatic death bears no signs of the fatal injuries, serious difficulty may be encountered in collecting insurance or workmen's compensation for accidental death. Such difficulties can usually be resolved unequivocally in favor of the beneficiary if an autopsy has been made. The possibility that fatal injuries may be sustained without associated external evidences of the injuries is recognized by life insurance companies. I have investigated deaths in cases in which no abnormalities were visible on the surface of the body, and in which the accident insurance policies contained, as a prerequisite to payment, a clause to the effect that the exterior of the body must show evidences of the effects of violence. It is believed that a more rational restriction would require "external

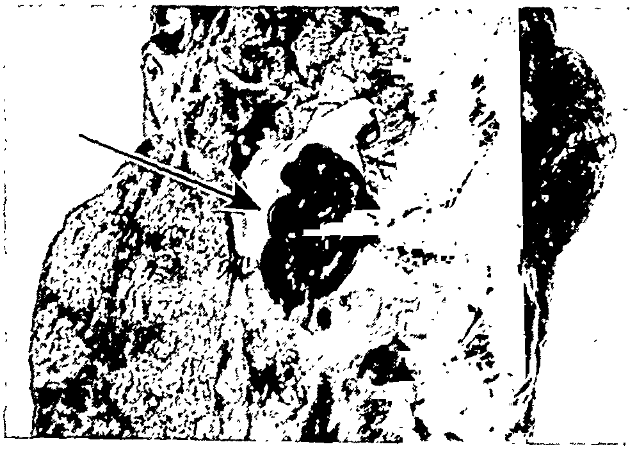


Fig. 3 (Case 5).—A coiled embolic mass in the right pulmonary artery. The thrombus had formed in the left femoral vein as a result of injury to the extremity.

---

[1] Moritz, A. R., and Dutra, F. R.: Scientific Evidence in Cases of Injury by Gunfire, Arch. Path. 37: 340-349 (May) 1944.

[2] Helpern, M.: Postmortem Examination in Cases of Suspected Homicide, Ann. Int. Med. 24: 666-700 (April) 1946.

marks from the trauma, or evidence of it as revealed by an autopsy."

Two of the five cases described in this paper were homicides. The traumatic nature of, and the criminal responsibility for, these two deaths could not have been established unless autopsies had been performed. It is impossible to estimate how many homicides by direct violence remain undiscovered in the United States each year. Doubtless, the number of such deaths varies considerably in different areas and is inversely related to the proportion and adequacy of the postmortem examinations made on bodies that come under the jurisdiction of the coroner or medical examiner. It has been recognized that a reasonably proper ratio of medicolegal autopsies to deaths that legally require autopsies in urban areas is 1 to 5; in rural areas, where there is greater likelihood of obtaining from neighbors and witnesses reliable facts relating to such deaths, the ratio may be as low as 1 to 10 with little likelihood of homicides remaining undiscovered.[3] There are few jurisdictions in this country in which these autopsy rates are even approximated.

SUMMARY

Deaths from injuries due to violence may occur without significant damage to the surface of the body. The traumatic nature of such deaths may be unsuspected by physicians and investigating officials. Failure to recognize that a death has resulted from trauma predisposes inequities of insurance settlements, inability to prosecute murderers, and inaccuracies in vital statistics. The number of traumatic deaths in which the factor of violence remains unrecognized can be diminished only by increasing the frequency of medicolegal autopsies throughout the country.

College of Medicine—Eden Ave.

---

[3] Supplementary Report of Board of Trustees: Report of Committee to Study the Relationship of Medicine and Law, Organization Section, J. A. M. A. **125**: 577-583 (June 24) 1944.

THROMBOTIC OCCLUSION OF AORTA AS DEMONSTRATED BY TRANSLUMBAR AORTOGRAMS

Robert V. Elliott, M.D.
and
Mordant E. Peck, M.D., Denver

Translumbar aortography is a relatively recent addition to the procedures available in the diagnostic armamentarium. The method was first adequately described by the Spanish urologist, Dos Santos,[1] and it has been proved a valuable adjunct to the diagnosis of pathological renal conditions. Subsequent experience by urologists in this country [2] have led to perfections in the technique and to expansions in the usefulness of the method. Experience has also proved it to be a safe and uncomplicated procedure.

Application to the diagnosis of aortic vascular disease has lagged considerably behind the development of the procedure for the diagnosis of pathological renal conditions. Leriche [3] has referred in his discussion of thrombotic occlusion of the aorta to the arteriograms performed by Dos Santos. The first report, however, to appear in this country relative to the utilization of this method for the specific diagnosis of aortic disease appeared in 1947, when Price and Wagner [4] reported two cases of aortic thrombosis diagnosed antemortem by this means. These authors stated that to their knowledge no other cases of aortic occlusion had previously been diagnosed antemortem by aortography. Blakemore[5] mentioned one case in which he had produced occlusion during electrocoagulation of an aneurysm and subsequently confirmed it by an aortographic examination. In a more recent report [6] on the electrocoagulation method for treating aneurysms, he describes five cases which have been followed by translumbar aortographic examination to determine the effectiveness of this method for coagulation. Elkin [7] has reviewed the surgical treatment of insidious thrombosis of the aorta and includes among his report of 10 cases two cases diagnosed by aortographic examination. Boyd [8] has recently reviewed the literature on the subject of aortic thrombosis and reports two cases, one in which the diagnosis was suggested by retrograde aortographic examination. Farinas [9] reports another such case diagnosed by retrograde aortographic examination, but which was suggested more than proved because of the appearance of the collateral circulatory bed; the exact location of the obstructive process was not identified.

In Boyd's opinion the incidence of aortic thrombosis is "greater than the literature may indicate" (1.1% in 1,000 consecutive autopsies).[10] We are entirely in agreement with this statement and feel that the procedure of translumbar aortographic examination, if used much more frequently, would increase our accuracy of diagnosis and would thereby substantiate this opinion. It is our purpose here to describe the procedure and to report four cases of

---

From the Department of Medicine and Surgery, University of Colorado Medical Center.

[1] Dos Santos, R.; Lamas, A., and Pereira Caldas, J.: Artériographie des membres et de l'aorte abdominale, Paris, Masson et Cie, 1931. Dos Santos, R.; Lamas, A., and Caldas: L'artériographie des membres, l'aorte et de ces branches abdominales, Bull. et mém. Soc. nat. de chir. **55**: 587, 1929.

[2] Goodwin, W. E.; Scardino, P. L., and Scott, W. W.: Translumbar Aortic Puncture and Retrograde Catheterization of the Aorta in Aortography and Renal Aortography, Ann. Surg. **132**: 944, 1950. Evans, A. T.: Translumbar Arteriography: Preliminary Report, Cincinnati J. Med. **32**: 47, 1951. Smith, P. G.; Rush, T. W., and Evans, A. T.: An Evaluation of Translumbar Arteriography, J. Urol. **65**: 911, 1951. Nelson, O. A.: Arteriography of the Abdominal Organs by Aortic Injection: Preliminary Report, Surg., Gynec. & Obst. **74**: 655, 1942. Nelson, O. A.: Arteriography in Renal and Abdominal Conditions, J. Urol. **53**: 521, 1945. Doss, A. K.: Translumbar Aortography: Its Diagnostic Value in Urology, J. Urol. **55**: 594, 1946. Wagner, F. B., Jr.: Arteriography in Renal Diagnosis: A Preliminary Report and Critical Evaluation, J. Urol. **56**: 625, 1946.

[3] Leriche, R., and Morel, A.: The Syndrome of Thrombotic Obliteration of the Aortic Bifurcation, Ann. Surg. **127**: 193, 1948.

[4] Price, A. H., and Wagner, F. B., Jr.: Complete Occlusion of the Abdominal Aorta: Report of 2 Patients Diagnosed by Aortography, Surg., Gynec. & Obst. **84**: 619, 1947.

aortic thrombosis, which have been diagnosed by aortographic examination within the first six months in which we have been utilizing this diagnostic method.

METHOD

Translumbar aortographic examination is not a difficult technical procedure. The method has been described by Smith, Rush, and Evans,[11] and the equipment used by them is available. They utilize a 6 in., 18 gage needle, a 10 cc. Sana-Lok syringe, a plastic connector tube between the needle and syringe, and 12 cc. of 75% sodium iodomethamate (neo-iopax®).[12] The procedure is carried out in an x-ray room so that exposures may be made on a standard x-ray table equipped with a high speed Buckey grid. The exposure times range from 1/10 to 5/10 seconds with the kilovolt requirements adjusted for a density comparable to that of a routine flat x-ray of the abdomen. A standard 14 by 17 in. film is utilized with the patient in a face down position. The film should be so placed as to include the area between the 10th and 11th thoracic vertebra and the lower limits of the pelvis. This will include the bifurcation of the aorta and usually also the bifurcation of the iliac arteries. It is advisable to take a scout x-ray to insure proper positioning and to allow for any necessary correction in exposure technique.

The patient is anesthetized by the intravenous administration of thiopental (pentothal®) sodium. The needle is then introduced into the aorta in the following manner. A point is selected 8 cm. lateral to the spinous processes close to the inferior margin of the 12th left rib. The needle is advanced medially, superiorly, and anteriorly so as to impinge against the body of the 11th or 12th thoracic vertebra. It is then moved in a step-like fashion to a point where the tip just slips past the lateral margin of the vertebral body. The stylet is then removed, and the needle is advanced until it pierces the aorta. A definite "snap" will be felt when the wall of the aorta is punctured, and there will be a steady drip of blood from the needle, in contrast to the forceful flow with an arterial puncture. The syringe and tubing containing 12 cc. of 75% sodium iodomethamate is connected to the needle; pulsations should be noted in the plastic tubing. The rotary anodes of the x-ray machine are started, and the injection is made over a period of approximately three seconds. Film exposure is made while the last 1 to 2 cc. of contrast medium is being injected. The needle is then immediately withdrawn by a quick steady pull. Five seconds later a third x-ray, the so-called nephrogram, can be taken; this particular x-ray is of the utmost value in differentiating between a tumor and a cyst, but it is not necessary for observing abnormalities in any of the major arteries of the aorta. It is difficult to obtain this view without the presence of an automatic casette changer, but it can be done with very close teamwork among the x-ray technicians.

The patient can be returned to his bed as soon as the last exposure has been completed. Previous routines can be reinstituted as soon as he has recovered from the anesthesia. Morbidity with this procedure is no greater than that following lumbar puncture, except that some patients complain of a mild left shoulder pain, which is very transitory and usually easily controlled with acetylsalicylic acid (aspirin).

The technique described here was used in each of the cases reported below and has been the standard procedure for aortographic examination since its institution in this medical center.

REPORT OF CASES

CASE 1.—G. P., a white man, 62, was admitted to Denver General Hospital on Nov. 17, 1950, because of severe pain in both legs during the previous nine days and a sensation of paralysis, most marked in the left leg. Two years previously he had been hospitalized because of a similar episode, primarily with the right leg. He had had increasing intermittent claudication for 10 to 12 years, until he was able to walk only two blocks without resting. The immediate complaint started suddenly after exposure to a cold wind. The pain had become increasingly severer, and the left foot had started to turn blue.

Examination disclosed a temperature of 101 F., a pulse of 112, a respiration rate of 20, and a blood pressure of 105/70 in both arms. The heart, lungs, and abdomen were not remarkable. The patellar and ankle reflexes were weak, and superficial sensation in the legs and feet was decreased. The lower extremities were cold and slightly cyanotic. This was severer on the left, with an in-

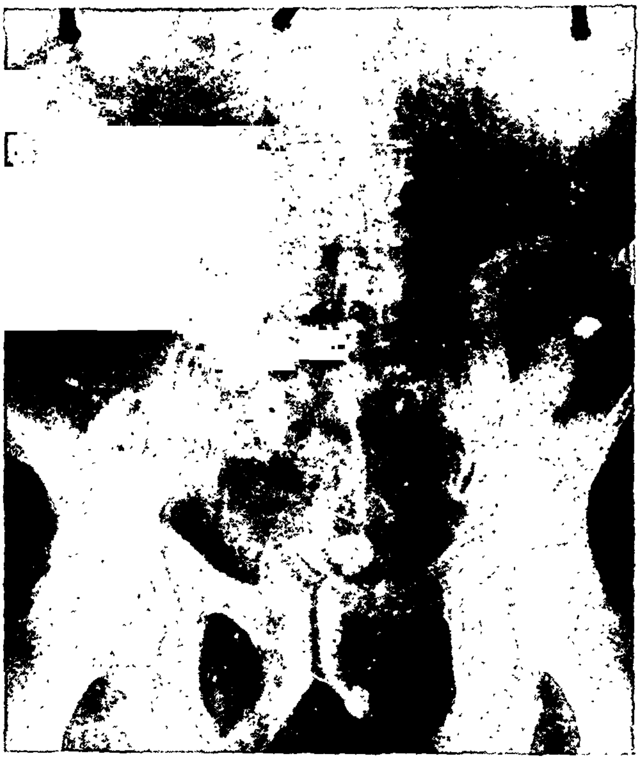


Fig. 1.—Aortogram in Case 1. Abrupt irregular termination of the contrast material over the area of L_3 and L_4 is characteristic of aortic occlusion; smaller collateral vessels below the level of the occlusion are typically filled.

---

5. Blakemore, A. H.: Angiography—An Evaluation of Its Usefulness, S. Clin. North America **26**: 326, 1946.

6. Blakemore, A. H.: Progressive Constrictive Occlusion of the Abdominal Aorta with Wiring and Electrothermic Coagulation: A One Stage Operation for Arteriosclerotic Aneurysms of the Abdominal Aorta, Ann. Surg. **133**: 447, 1951.

7. Elkin, D. C., and Cooper, F. W., Jr.: Surgical Treatment of Insidious Thrombosis of the Aorta: Report of 10 Cases, Ann. Surg. **130**: 417, 1949.

8. Boyd, W. M.: Thrombosis of the Terminal Aorta with Aortitis and Periaortitis: Report of 2 Cases Treated by Aortectomy, Lumbar Sympathectomy, and Vena Caval Ligation, Rocky Mountain M. J. **47**: 936, 1950.

9. Farinas, P. L.: Retrograde Abdominal Aortography, Am. J. Roentgenol. **55**: 448, 1946. Farinas, P. L.: Retrograde Aortography in the Study of the Abdominal Aorta and Iliac Arteries, Surgery **18**: 244, 1945.

10. Cleland, J. B.: Occlusion of the Abdominal Aorta by Ante-Mortem Thrombosis, M. J. Australia **2**: 359, 1944.

11. Smith, P. G.; Rush, T. W., and Evans, A. T.: Interpretation of Translumbar Arteriograms, J. Urol. **66**: 145, 1951.

12. The sodium iodomethamate used in this study was supplied by Schering Corporation, Bloomfield, N. J.

definite line of demarcation 10 cm. proximal to the malleoli. Both legs were tender and painful on motion. Dorsalis pedis and posterior tibial pulsations could not be felt in either leg; popliteal and femoral pulsations were present in the right leg but absent in the left.

Shortly after admission a left paravertebral block was performed, which resulted in slight elevation in the temperature of the left foot. In spite of daily blocks for the next three days, the demarcated zone became more pronounced. On Nov. 21, 1950, a translumbar aortogram (Fig. 1) revealed an abrupt irregular termination of the contrast material 6 cm. proximal to the bifurcation of the aorta—consistent with a thrombosis. The patient refused amputation of the gangrenous extremity and left the hospital against advice. On Dec. 12, 1950, he was readmitted with signs of progressive arterial insufficiency in both legs and superficial ulcerations of the left foot. Chemotherapy was instituted, and the left lower extremity was packed in ice. Three days later, under spinal anesthesia, a midthigh amputation was attempted, but the patient suddenly became cyanotic, complained of chest pain, and died. Autopsy revealed a massive pulmonary embolus. The aorta (Fig. 2) was almost totally occluded by a well-organized thrombus, which was attached to a small arteriosclerotic plaque.

Case 2.—M. B., a white housewife, 54, was admitted to Colorado General Hospital on Dec. 26, 1950, complaining of blue discoloration of the toes of the right foot. The previous two months she had noted severe exertional pain with intermittent numbness in her legs, which was relieved by resting. The toes of her right foot had gradually turned blue and were quite painful. The latter complaint seemed to be aggravated by bed rest and necessitated nocturnal ambulation for relief.

Examination disclosed a temperature of 98 F, a pulse of 96, a respiration rate of 18, and a blood pressure of 140/94 in the upper and 0/0 in the lower extremities. The heart was slightly enlarged, and the electrocardiogram indicated slight left ventricular strain. The lungs were clear to auscultation and percussion. The liver was palpated 3 cm. below the right costal margin. Pulsations of the abdominal aorta were palpable in the epigastrium; femoral pulsations were debatable; popliteal, posterior tibial, and dorsalis pedis pulsations were absent. Slight nonpitting edema of the lower extremities and dark purple painful discoloration of the toes and dorsum of the right foot were present. The temperature was grossly equal in both lower extremities. Reflexes and sensations were normal. X-ray showed calcifications of the aortic arch and the abdominal aorta.

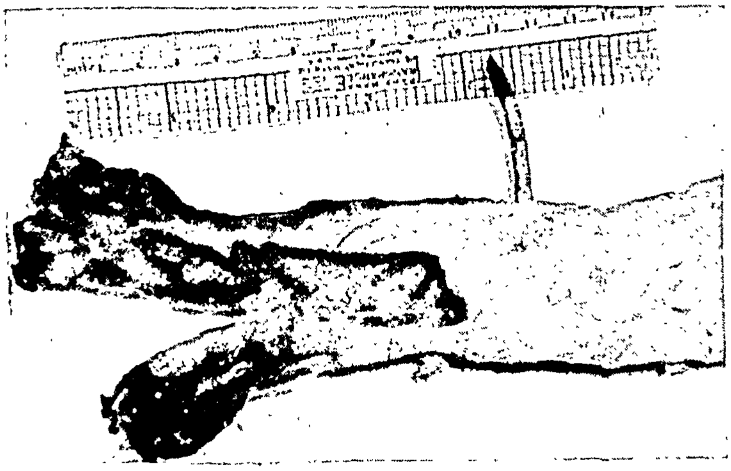


Fig. 2.—Postmortem finding in Case 1 of a well-organized thrombus in the terminal aorta with propagations into both iliac arteries. The irregular superior margin corresponds to the margins noted in the aortogram. Note the large inferior mesenteric artery projecting to the left.

A caudal block afforded prompt relief of pain in the left foot. The next day continuous caudal block was instituted, but the second toe of the right foot remained blue and cold. An attempt was made to inject 0.3 mg. of CCK (dihydroergocornine, dihydroergocristine, dihydroergokryptine ["hydergine"]) into the right femoral artery, but the lumen was difficult to locate. A diagnosis of occlusion of the femoral or iliac arteries was made. The patient was maintained on a course of CCK administered orally. This regimen relieved her pain considerably. On Jan. 12, 1951, a translumbar aortogram (Fig. 3) revealed an abrupt transverse termination of the contrast material just distal to the orifices of the renal arteries. On Jan. 19, 1951, the evening before contemplated abdominal sympathectomy, a left pleuritic pain suddenly developed, which was diagnosed as pulmonary embolism with infarction. Under anticoagulant therapy she recovered. On Jan. 29, 1951, she had a bilateral lumbar sympathectomy, ligation of the inferior vena cava, and "aortic stripping." Palpation of the aorta at the site of the thrombosis gave the impression that some blood might be getting past the thrombus. Aortic transsection was not, therefore, done. On March 21, 1951, the gangrenous left second toe was amputated. After these procedures the symptoms due to the aortic thrombosis were relieved to the point that ambulation and limited activity were possible.

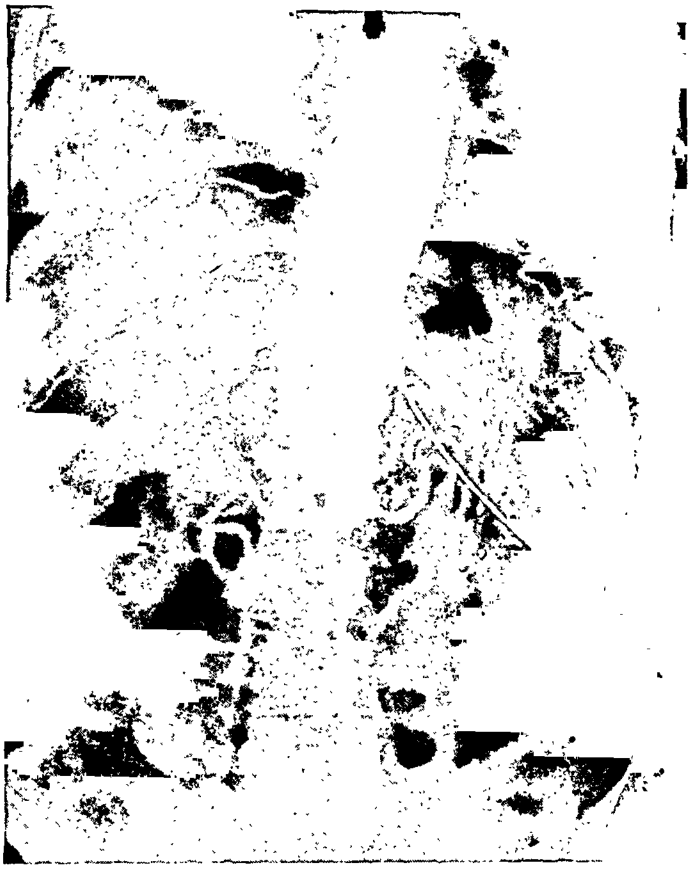


Fig. 3.—Aortogram in Case 2 revealing an abrupt transverse termination of the contrast material just distal to the well-visualized renal arteries. Note tortuous intercostal arteries with anastomotic branches. The superior mesenteric artery, arising just proximal to the renal arteries, shows filling of its tributaries in the pelvic area well below the termination of the contrast material in the aorta.

Case 3.—F. A., a white man, 46, with known diabetes since 1945, was admitted to Fitzsimons General Hospital on Nov. 27, 1950, for regulation of his diabetes.[13] He complained of aching pain and weakness in his thigh muscles, aggravated by exercise and characteristically relieved by resting a few moments. These symptoms had begun two years before, at which time a routine examination had revealed palpable femoral, posterior tibial, and dorsalis pedis pulsations. A 2,300 calorie diet and 25 units of protamine zinc insulin and 50 units of regular insulin daily were prescribed. In mid-December he was discharged from the hospital. It was recommended that he return in one or two months for reevaluation of the vascular status of his lower extremities. He was therefore readmitted on Feb. 15, 1951, with the complaint that his exercise tolerance was much decreased and that the pains in his thighs were worse. Questioning revealed that he was unable to obtain an erection with sexual stimulation.

---

[13] Col. L. C. Govette and Col. James Forsee, of Fitzsimons Hospital, gave their permission to include this report.

Physical findings on examination were noncontributory except for absent femoral, popliteal, posterior tibial, and dorsalis pedis pulsations bilaterally. The patient's diabetes was well controlled.

On Feb. 28, 1951, a translumbar aortogram (Fig. 4) revealed a thrombotic occlusion of the aorta extending from approximately 1 cm. distal to the origin of the right renal artery to about 4 cm. distal to the origin of the left renal artery. Sympathetic block on the right produced a marked increase in exercise tolerance for both legs. Anticoagulant therapy was immediately instituted. On March 6, 1951, a right lumbar sympathectomy was performed with the removal of the second and third lumbar ganglia. Temperature studies before and after this procedure revealed an increase in the temperature of the right foot and leg. April 5, 1951, a left lumbar sympathectomy was performed, and similar objective as well as subjective improvement was noted.

Case 4.—W. W., a retired rancher, 70, was admitted to Colorado General Hospital on May 14, 1951, after hospitalization at Colorado Psychopathic Hospital for a toxic psychosis thought to be due to meperidine (demerol®). He had been fairly well until May 6, 1951, when he collapsed because his legs "gave out from under him." Four days later a sudden onset of severe cramping nonradiating epigastric pain developed, which was relieved by meperidine. The next day he complained of pain in both hips and had another episode of epigastric distress; he became ashen, and abdominal distention developed. He refused hospitalization adamantly so was again administered meperidine, with relief of pain. Shortly afterward he began having visual hallucinations, became violent, and required commitment. Past history revealed that he had suffered from "rheumatism" of his legs for 20 years. The past four months he had been unable to walk more than one-half block without resting, in order to obtain relief from pain in the calves of both legs. On admission he was found to experience severe pain in both legs when standing.

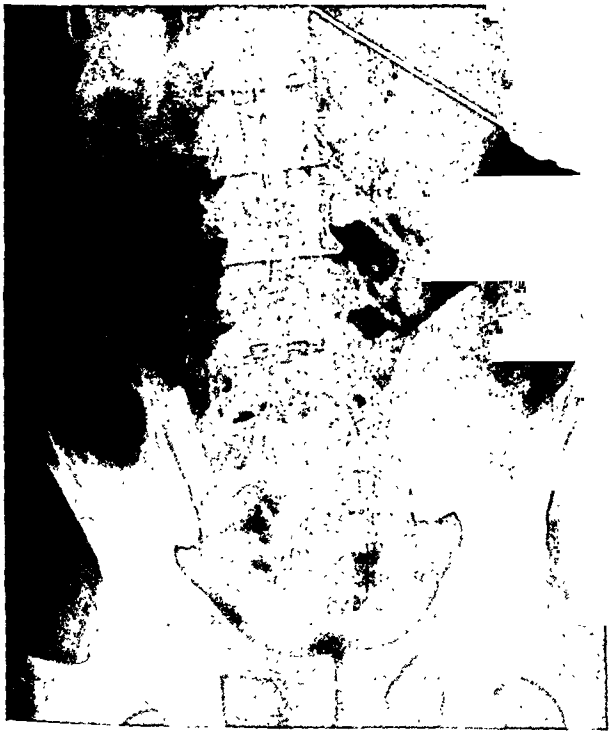


Fig. 4.—Aortogram in Case 3 showing the aorta to be completely filled with contrast material to the level of the left renal artery. A thrombus occludes approximately one-half the lumen from this site to the level of L_4, where there is an abrupt termination of the contrast material. The superior mesenteric artery is visualized just to the left of the aorta with its branches well-filled below the level of the occlusion. A nephrogram is obtained with this exposure, since the time lapse from injection was ½ second.

Examination disclosed a temperature of 98.6 F, a pulse of 84, a respiration rate of 20, and a blood pressure of 130/80 in the upper and 0/0 in the lower extremities. The lungs were clear to auscultation and percussion. The heart was not enlarged; there were occasional extra systoles but no murmurs; the electrocardiogram showed slight left ventricular strain and premature ventricular contractions. The abdomen was slightly rounded, without tenderness, spasm, masses, or palpable organs. Aortic pulsations were not felt; femoral, popliteal, posterior tibial, and dorsalis pedis pulsations were absent bilaterally. The lower extremities had a full range of motion, blanched slightly with elevation, and became red when dependent. There was a slight decrease in the skin temperature of both feet and legs. The reflexes were normal, but there was diminished pain sensation over the distal half of the right tibial region, the right ankle, and the dorsum of the right foot. The chest x-ray showed normal condition; a flat x-ray of the abdomen revealed a linear density compatible with a diagnosis of calcification in the left common iliac artery.

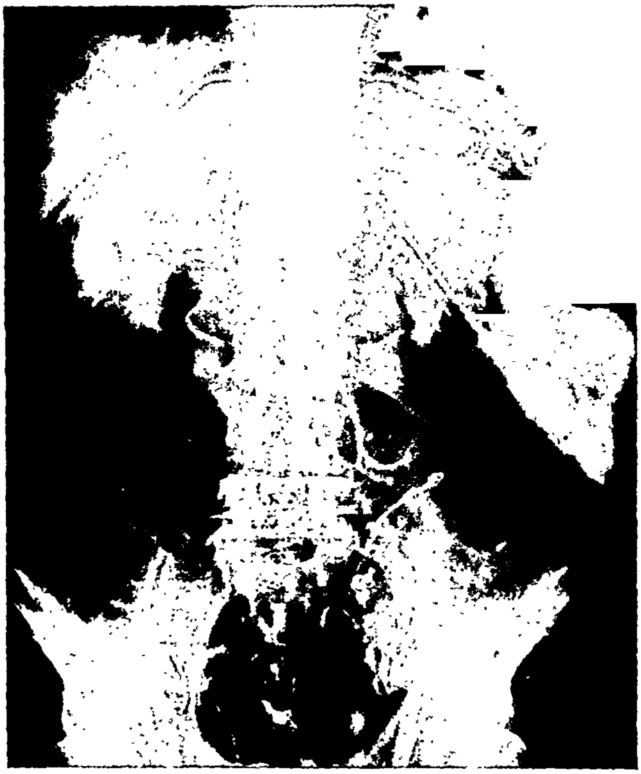


Fig. 5.—Aortogram in Case 4. The contrast material follows much the same pattern as in Case 3 (Fig. 4). There is, however, a more irregular outline to the thrombus. The renal arteries are clearly visualized and also the extensive collateral anastomoses through the intercostal arteries.

On May 15, 1951, a translumbar aortogram (Fig. 5) revealed the characteristic findings of a thrombotic aortic occlusion. The patient was transferred to the surgical service on May 16, 1951, for operative therapy.

COMMENT

Thrombotic occlusion of the aorta is not a recently recognized disease entity. Graham,[14] in 1814, made an attempt to differentiate between embolic occlusion and thrombotic occlusion of the terminal aorta. His work was referred to by Welch,[15] who in 1898 gave a classical description of this pathological process and collected all the then reported cases of thrombosis and embolism of the terminal aorta. Fourteen of these cases were believed to be thrombotic in origin, of which seven were considered primary. In 1923 Leriche [16] reported again on the entity of thrombotic occlusion. His interest in this particular disease continued uninterruptedly, and by 1940 [17] he was able to describe a symptom complex and five cases diagnosed and substantiated at surgery. Greenfield [18] in 1943 again reviewed the literature, finding 156 cases of thrombosis and embolism of the abdominal aorta. Holden [19] in 1946 was apparently the first to report the successful surgical treatment of this disease in the United States. The problem of diagnosis, however, continued to be a deterrent to our comprehension and therapy of this disease process. The key to overcoming this difficulty was given in a report by Price and Wagner [4] on the accuracy of diagnosis by utilizing the procedure of aortographic examination in studying suspected cases of aortic thrombosis.

---

[14] Graham, R., cited by Welch, W. H.: Embolism and Thrombosis of the Abdominal Aorta, in Alibutt, C., and Roleston, H. D.: System of Medicine, London, Macmillan & Co., Ltd., 1909.

[15] Welch, W. H.: Embolism and Thrombosis in Allbutt, C., and Roleston, H. D : System millan & Co., Ltd., 1909, vol. 6, p. 809.

Leriche and Morel in 1948 [20] brought up to date information on this disease process in an article reviewing the clinical aspects, the diagnosis, and the treatment. They emphasize the clinical symptoms of weariness and fatigue of both lower extremities, usually associated with a global atrophy of both lower limbs without the presence of trophic changes. There is a pallor of the legs and feet even on standing. In the men there is, in addition, the inability to maintain a stable erection, the explanation being that the blood flow is insufficient to fill the spongious process. Clinical investigation will reveal that no pulse is palpable in either leg or in either groin. Pulsations in the abdominal aorta may, however, be felt high up above the umbilicus. Such findings usually mean one of three things; (1) coarctation of the aorta, (2) abdominal aneurysm, or (3) thrombotic obliteration of the aorta. A positive diagnosis, particularly in the case of thrombotic obliteration of the aorta, can only be established by translumbar aortographic examination. In addition, with this procedure the exact location of the lesion can be identified. Moreover, it is possible to misinterpret an occlusive peripheral vascular disease with this particular process in the abdominal aorta. We have on one occasion examined a patient who had the classical clinical picture of aortic thrombosis, but the aortogram did not support this impression.

The value of making an accurate diagnosis is extremely important to the welfare of the patient because it affects the therapy which is instituted. Conservative or medical management, or operative sympathectomy alone, does not constitute adequate treatment for the patient with aortic occlusion, as it might for the patient with peripheral vascular disease in which the obliterative process is associated with a superimposed reflex vasospasm. Leriche [3] emphasized the significance of resection of the segment of aorta containing the thrombotic process as an additional means of interrupting the sympathetic outflow to the lower extremity. Elkin [7] also emphasized that such resection removes the thrombus and prevents the continuation of its formation. It has been shown that death may occur from proximal propagation of the thrombus to the point at which the renal arteries are involved. Aortographic examination is of benefit in determining, preoperatively, whether resection of the aorta is feasible or not. An advantage of the translumbar approach, in contrast to retrograde aortographic examination, as described by Farinas, is its ability to accurately delineate the upper margin of the thrombus.

The frequency with which aortic thrombosis is associated with thrombophlebitis and subsequent pulmonary embolus has recently been referred to by Boyd.[8] He mentions similar observations by Leriche and Martorell and recommends that vena caval ligation be performed as an adjunct to surgical therapy. In the absence of accurate diagnosis such ligation is not only contraindicated but might also be definitely harmful.

Translumbar aortographic examination is a satisfactory and uncomplicated procedure for the diagnosis of aortic disease. No difficulties are known to have resulted when it has been used properly. It has been argued that in patients with aortic occlusion the injected dye might lead to spasm of the collateral circulatory bed and thereby impair the remaining circulation to the lower extremities. This has not been observed in our experience in any instance, and any spasm that might possibly occur as a result of injection of a water soluble dye, such as iodomethamate, is transitory in nature and not an important consideration. The value of accurate diagnosis is of far greater significance than the possibility that such spasm might occur during the diagnostic procedure. Also it should be pointed out that if there is undue fear of the consequences of this localized collateral spasm, it might be overcome by a preliminary injection of procaine into the aorta or by injection of the ergot alkaloid preparation CCK, which has been shown to relieve the spasm of peripheral arterial disease.[21]

The fear of damage or hemorrhage from the introduction of a needle into an arteriosclerotic aorta for aortographic examination has not been borne out by the previous experiences of others or by our own observations. Autopsy in our first case failed to reveal any evidence of hemorrhage in the area of the puncture site, and, in fact, the site itself could hardly be identified.

It is concluded, therefore, that aortographic examination should be utilized in patients showing evidence of a high obstruction of the arterial blood supply to the lower extremities. It would seem that if physicians are on the look-out for this particular disease entity, it will be found much more frequently than has been the case in the past. Translumbar aortographic examination is felt to be a significant and practical adjunct to the diagnosis of aortic disease, and its use will considerably broaden the understanding of these pathological processes.

---

16. Leriche, R.: Des oblitérations artérielles hautes (oblitération de la terminaison de l'aorte) comme cause des insuffisances circulatoires des membres inférieurs, Bull. et mém. Soc. nat. de Chir. **49**: 1404, 1923.

17. Leriche, R.: De la résection du carrefour aortico-iliaque avec double sympathectomie lombaire pour thrombose artéritique de l'aorte: Le syndrome de l'oblitération termino-aortique par artérite, Presse méd. **48**: 601, 1940.

18. Greenfield, I.: Thrombosis and Embolism of the Abdominal Aorta, Ann. Int. Med. **19**: 656, 1943.

19. Holden, W. D.: Arteriosclerosis Obliterans of the Abdominal Aorta, Arch. Surg. **53**: 456 (Oct.) 1946.

20. Leriche, R., and Bertrand, I.: Thromboses artérielles: Physiologie, Pathologique et traitement chirurgical, Paris, Masson & Cie, 1946. Leriche and Morel.

21. Anderson, L.: Personal communication to the authors. Hurley, L. A.; Roberts, J. E.; Buchanan, A. H., and Tillquist, G.: Preliminary Investigation of the Value of the Dihydrogenated Alkaloids of Ergot in the Treatment of Experimental Frostbite, Surg., Gynec. & Obst. **92**: 303, 1951.

SUMMARY

The subject of diagnosis of aortic thrombosis is reviewed. Four cases diagnosed antemortem by translumbar aortographic examination are reported. We know of only four such cases previously reported in the English literature. Experience in these cases would suggest that this disease process occurs more frequently than is generally recognized. The use of aortographic examination in suspected cases is of great value in establishing the diagnosis of aortic occlusion and in planning operative therapy. The procedure of translumbar aortographic examination is described. It is felt that this procedure does not carry any undue risk when used in patients with aortic disease.

4200 E. 9th Ave. (Dr. Peck). Dr. Elliott is now with the U. S. Air Force.

TRUE HERMAPHRODITISM

John I. Brewer, M.D., Harold O. Jones, M.D.
and
Harry Culver, M.D., Chicago

The term true hermaphrodite is used to indicate that the person is bisexual in both the gonadal and secondary sex structures. A true hermaphrodite, in the classic sense [1] should be able to fertilize a female, be fertilized by a male, and fertilize itself; but no such instance is authoritatively reported in the literature. The term pseudohermaphrodite indicates that the person has gonads of one sex and is bisexual in the secondary sex structures.

Hinman [2] has classified true hermaphrodites concisely as follows: (1) bilateral: testis and ovary (ovotestis) on each side, (2) unilateral: ovotestis on one side with ovary or testis on the other side, and (3) lateral or alternating: testis on one side and ovary on the other side. The patient reported here is a true hermaphrodite of the unilateral type, according to Hinman's classification. The extreme rarity of proved instances of true hermaphroditism and the widely divergent treatment of this condition as well as that of pseudohermaphroditism warrants the presentation of a single case. Arey [3] recently has made an exhaustive study and analysis of cases of true hermaphroditism as reported in the world literature.

REPORT OF A CASE

The patient, a Negro woman aged 18, was admitted to St. Luke's Hospital on June 22, 1939. The following history was obtained from the patient, her mother, previous hospital and out-patient records, and the office of the county clerk. The records of the hospital show the patient to have been born June 9, 1920, and to have been registered as a male at the time of birth. The certification of birth recorded at the office of the county clerk on July 7, 1920, certifies that the patient, of the male sex, was born on the above date. The name as listed reveals the existence of some confusion in regard to the sex. The mother would not accept the obstetrician's statement that her child was a boy and immediately upon leaving the hospital began to raise the infant as a girl.

Early in her life the patient was told by her mother that she was different from other boys and girls and that she should not let others see her genitalia. During childhood she was known as a tomboy and enjoyed playing baseball and other games with boys. In high school she was popular with both girls and boys, believed herself to be entirely feminine, went to dances with boys, and partook of their kisses and caresses with pleasure. She feared the possibility of their finding out about her and realized that she could not marry and live in normal relationship with a husband. The desire to be married was the factor that caused her to seek medical assistance at the age of 18. Her physical appearance, excluding the external genitalia, was such that she was accepted as a girl by all her friends. She had never menstruated, and there had never been any cyclic pain or other symptoms suggestive of a hematometra or hematocolpos. Upon questioning, the patient stated emphatically that she was a female but that she was deformed.

Physical Examination.—The patient had the external body build of a well-developed female (Fig. 1), although the shoulders were square and the hips narrow. She was of normal height and weight. The hair distribution was distinctly feminine. The breasts were of moderate size, were well formed and contained breast tissue. A phallus-like structure was 4 cm. long and 2.4 cm. in diameter (Fig. 2). The urethral orifice opened in the midline some distance from the base of the phallus. There were large

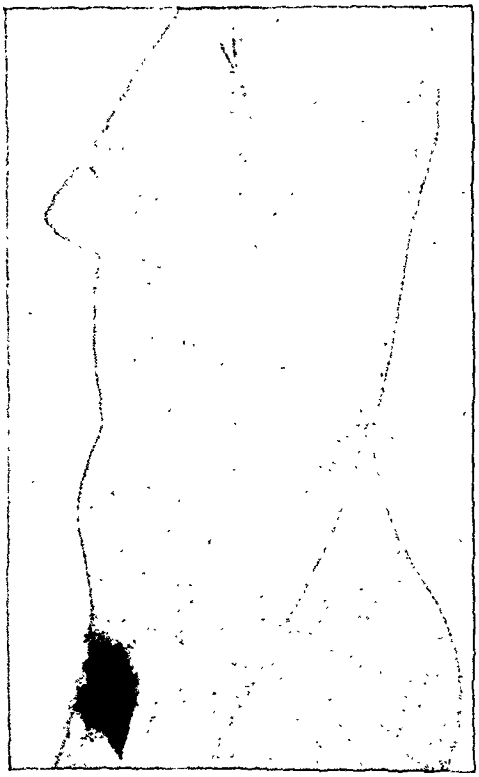


Fig. 1.—The patient in the case reported.

From the Departments of Gynecology, Obstetrics, and Urology, and the Henry Baird Favill Laboratory, St. Luke's Hospital, and Northwestern University Medical School. Dr. Brewer is now at Passavant Memorial Hospital.

1. Young, H. H.: Genital Abnormalities, Hermaphroditism and Related Adrenal Diseases, Baltimore, Williams and Wilkins Company, 1937.

2. Hinman, F.: The Principles and Practice of [illegible] W. B. Saunders Company, 1935.

3. Arey, L. B.: True Hermaphroditism, to

Microscopic examination of the gonadal tissue in our case revealed the corupus luteum to be histologically normal and young. Proved instances of ovulation in true hermaphrodites have not been described so far as we know. In addition to the corpus luteum, there were other corpora lutea in various stages of degeneration, which indicated that ovulation and corpus luteum formation had occurred previously in the gonad that contained the testicular tissue. These findings demonstrate that ovarian function can be maintained in the absence of the uterus, a fact that many authors have denied. We do not subscribe to the belief that ovaries do not function in the absence of the uterus.

The testicular tissue in the right ovotestis was composed of interstitial cells and seminiferous tubules with spermatogonia and Sertoli cells. The interstitial cells were numerous and appeared normal histologically. The entire amount of testicular tissue was approximately 1 cm. in diameter. There was little evidence of the production of testicular androgen, as indicated by the predominately feminine secondary sex characteristics. The patient had an enlarged clitoris, but the breasts and other characteristics were definitely feminine. This suggests the presence of active estrogen secretion. As Schiller [6] has remarked, it is difficult to understand why such patients as these are not masculinized to a greater extent by the testicular tissue as are some women who have small, virilizing tumors.

The microscopic findings in our case proved the patient to be a true hermaphrodite. Usually such studies are necessary. Some cases, however, may be accepted without microscopic proof, provided other significant evidence is presented. For instance, in one case reported by McIver, Seabaugh, and Mangels [7] histological examination of the intra-abdominal gonad, which was removed entirely, demonstrated it to be an ovary. The other gonad, which was located in the scrotum, was not removed, nor was a biopsy of it made. With only this one gonad remaining, spermatozoa were recovered. This would seem acceptable proof that there was functioning testicular tissue in the remaining gonad, thereby establishing the diagnosis of true hermaphroditism. Malgras and Gricouroff [8] reported another case in which an atrophic testis was removed and, although the other gonad was not seen, the patient menstruated subsequently. This would be acknowledged as indirect proof of true hermaphroditism.

Sisk and Cornwell [9] reported one patient (pseudohermaphrodite, Case 8) who had definite masculine body configuration, but who had ovaries and no testes. Witschi and Mengert [10] describe one patient with feminine body configuration, desires, and emotions who had two testicles and no ovarian tissue. Proof of the genetic sex was established by abdominal exploration, followed by removal of both testicles, which were located in a scrotum, and complete microscopic studies. Hormonal studies before castration revealed high urinary levels of estrogen. Following the removal of the gonads, the estrogenic hormone disappeared from the urine, and the gonadotropic hormone was elevated. Simultaneously, hot flushes and other menopausal symptoms developed. The only conclusion that could be reached was that estrogen was produced in the testicles. Such findings indicate that the presence o the male or female hormone in the urine does not alway reveal the true genetic sex in hermaphrodites.

While the foregoing deals in large part with the establishment of genetic sex in the adult, certain portions pertain equally well to infants and children. A correct diagnosis early in life is important, because it allows th child's psychological sex to be developed in keeping wit the genetic sex in cases of pseudohermaphroditism, or i keeping with the predominate gonadal sex in cases of tru hermaphroditism. Since this is the ideal situation, exploratory operation and microscopic examination of the gonadal tissues should be made as early as feasible in the lif of the child. Any evident abnormality of the externa genitalia, such as a profound degree of hypospadias, requires thorough study. The physician should not be content until he is satisfied that the genetic sex has bee established. Even if this requires abdominal exploratio during the first few years of life, it should be done.

When the genetic sex has been determined with certainty in these young patients, a plan for the immediat and future medical and surgical care must be prepare An adequate plan is to correct immediately only thos portions of the external genitalia that would interfer with raising the child according to the genetic or predominate sex of the gonads. Other indicated procedures such as the construction of a vagina, should be delaye until the patient is near the age of puberty. Constructio of an artificial vagina in a very young person is frequentl unsatisfactory because of the inability of the patient t cooperate in maintaining its caliber. The operative result are considerably better when the procedure is done nea or after puberty. This delay in constructing a vagina doe not interfere with the normal development of psychological sexual characteristics. The child then can be raise in accordance with the genetic sex and will, we believe respond to her environment in such a mannar that th psychological sex will correspond to the genetic sex. Th subsequent life of such a patient would be as free of conflicts as is possible.

In the mature person the genetic sex may play a secondary role to the psychological sex. Ellis,[11] Young, Greenhill and Schmitz,[12] Novak,[13] Sisk and Cornwell, and others have clearly shown that environmental factor are frequently more important than the sex of the gonad in the development of sex desires and emotions. Ellis [1 has collected from the literature the sexual histories c pseudohermaphrodites and true hermaphrodites. Ver few were homosexuals; most were heterosexual. He use the designation heterosexual hermaphrodite to mean on whose sexual desires are directed toward members of the sex opposite to which he or she has been raised. Some of these heterosexual hermaphrodites were raised as females and had entirely feminine roles, but their gonads were testes. He also called attention to the fact that every heterosexual hermaphrodite raised as a male took on a masculine role, and every one raised as a female took on a feminine role, irrespective of the character of the gonads present. These patients, for the most part, had adapted themselves to their sex roles in a satisfactory manner.

---

[6] Schiller, W.: Congenital and Acquired Sex Changes, Internat. Clin. 3: 86-104, 1940.

[7] McIver, R. B.; Seabaugh, D. R., and Mangels, M., Jr.: True Hermaphroditism: A Report of 2 Cases, J. Urol. **52**: 67-85, 1944.

[8] Malgras, M. M., and G. Gricuroff: Hermaphrodite de 63 ans à comportement féminin, Mém. Acad. Chir. Pav. **65**: 272-276, *1939.*

[9] Sisk, I. R., and Cornwell, P. M.: Pseudohermaphroditism, J. Urol. **47**: 721-737, 1942.

[10] Witschi, E., and Mengert, W. F.: Endocrine Studies on Human Hermaphrodites and Their Bearing on the Interpretation of Homosexuality, J. Clin. Endocrinol. **2**: 279-286, 1942.

[11] Ellis, A.: Sexual Psychology of Human Hermaphrodites, Psychosom. Med. **7**: 108-125, 1945.

[12] Greenhill, J. P., and Schmitz, H. E.: Hermaphroditism and Sex Determination, West. J. Surg. **48**: 36-41, 1940.

[13] Novak, E.: Sex Determination, Sex Differentiation and Intersexuality: a Report of an Unusual Case, J. A. M. A. **105**: 413-418 [illegible] 1935.

In persons who have a psychological sex at variance with the genetic sex, attempts to convert the patient to correspond with the genetic sex frequently lead to the development of severe mental conflicts. These conflicts may be so strong that the person subsequently is not suited to his or her environment. Such adult patients are usually better adjusted and happier if the genitalia are reconstructed in keeping with their psychological sex, disregarding completely the genetic sex. Reconstruction of genitalia along these lines has been done in a sufficient number of patients, and the results have been excellent enough to warrant acceptance of this dictum as a fact. Pratt,[14] as well as Ellis [11] and others, has reported such instances and stressed the importance of psychiatric evaluation. Most of the beneficial transformation that is produced is the direct result of surgically reconstructing the genitalia in keeping with the psychological sex.

This thinking is not unchallenged in the literature, but as Ellis [11] has pointed out, the bulk of the recent discussions indicate that it is correct. The problem in such adult patients is to alter the malformation in such a manner that the patient may assume the place in society to which he or she is psychologically conditioned. If this can be done best by disregarding the genetic sex we believe that such is the procedure of choice.

Reconstruction of the genitalia in pseudohermaphrodites or true hermaphrodites does not include castration. The only indication for castration is a pathologic lesion in the gonads themselves. The possibility of the development of malignant lesions in intra-abdominal testicles is so rare that castration is not justified because of this possibility alone. Removal of the gonads merely because they are opposed to the psychological sex will not change the psychological sex emotions but rather will take away from the patient hormonal influences that are beneficial. The removal of the gonads will produce various phenomena associated with castration. The patient in many instances has already demonstrated that the sex desires and emotions and the assumption of a given sex role in society are compatible with the presence of gonads of the opposite sex.

If the patient is a true hermaphrodite, as the one reported here, that portion of the ovotestis that is contrary to the psychological sex may be removed as long as sufficient gonadal tissue remains. Such was done in this case. In this particular instance it was not difficult to discern the true character of the gonad grossly when the gland was incised at operation. Doss and Priestley [15] reported an instance in which such a resection was performed. McIver, Seabaugh, and Mangles [7] state that there is no other instance recorded in which removal of one type of tissue in an ovotestis was accomplished. If this can be achieved during the procedure to establish the diagnosis of genetic sex, we feel that it should be done.

SUMMARY

A true hermaphrodite, 18 years of age, is reported. Microscopically, one gonad was proved to be an ovotestis and the other a normal ovary. The predominate genetic sex, the psychological sex, and the body configuration were female. The external genitalia were admixtures of male and female. The Müllerian derivatives were incompletely formed. Ovulation had occurred on several occasions, and the recent corpus luteum was histologically normal.

The genetic and psychological sex are both important in determining the diagnostic procedures that should be done and in deciding the most desirable sex to which a patient should be converted. The genetic sex, or the predominate gonad sex, is usually the most important if it can be determined in infancy, before the psychological sex is developed; the psychological sex is the most important if it is already developed and firmly fixed. All adult hermaphrodites should have competent psychiatric evaluation as soon as the diagnosis of the abnormality is made. Castration is not indicated in the surgical conversion of a pseudohermaphrodite or true hermaphrodite to one or the other sex, even though the gonads are of the opposite sex.

Judicial planning, well-chosen and correctly timed operative procedures, adequate psychotherapy, and hormonal therapy can make useful and socially acceptable persons of pseudohermaphrodites and true hermaphrodites. This is most emphatically true if the medical planning and procedures are instituted early in the life of the patient.

104 S. Michigan Blvd. (Dr. Brewer).

14. Pratt, J. P.: Pseudohermaphroditism, Am. J. Obst. & Gynec. **40**: 870-882, 1940.

15. Doss, A. K., and Priestley, J. T.: True Hermaphrodism: Report of a Case, J. Urol. **43**: 859-865, 1940.

Diagnosis of Protruded Intervertebral Disc.—There are four reasons why it is deemed advisable to do intraspinal investigations on all patients suspected of having a protruded lumbar disc: (1) Tumors of the spinal cord in, and cephalad to, the lumbar region may simulate the signs and symptoms of a protruded intervertebral disc. (2) In some instances, protrusion of the third, second, or first lumbar intervertebral disc may produce signs and symptoms commonly seen in protrusions occurring at lower intevertebral levels. (3) Multiple protrusions occur in about 18% of all cases of protrusion of an intervertebral disc, and since they may involve contiguous or scattered intervertebral spaces, contrast *myelography is the only practical* method by which they may be accurately localized prior to operation. (4) In rare instances, a protruded lumbar intervertebral disc and a tumor of the spinal cord may coexist, giving rise, usually, only to so-called typical signs and symptoms of protruded disc. (5) When contrast myelography is employed, the lesion is accurately localized in a high percentage of cases; thus the necessity of entering normal interspaces is obviated.—Hendrik J. Svien, M.D., Henry W. Dodge Jr., [illegible]D., and John D. Camp, M.D., I[illegible] of Spinal Flui[illegible]is and Contrast Myelography [illegible]ruded Lum[illegible] Suspected, *Surg*[illegible]*neco*[illegible], No[illegible]951.

REHABILITATION OF THE AMPUTEE

Henry H. Kessler, M.D., Newark, N. J.

Proper management of the amputee patient demands more of the physician than surgery alone. The physician's responsibility includes supervision of a complete and integrated rehabilitation program embracing psychological preparation, adequate surgery, after-care of the stump and preprosthetic training, and provision of the prosthesis and training in its use. Only through this type of three dimensional care can the amputee be provided with the physical and psychological equipment he requires for adjustment to his social and vocational environment.

It should never be forgotten that the amputee patient has a psychological problem which, if allowed to go unrecognized and untreated, may become more disabling to the patient than the amputation itself. The emotion experienced at the loss of a limb has been very well compared to the grief one feels at the death of a loved one. A part of one's body has been permanently lost. The bewilderment and desolation common among the newly amputated expresses itself in the anxious questions which the amputee asks his physician: "Will I walk again? Will I work again? How will my family and friends react?"

The physician should consider it part of his responsibility to assuage these fears and anxieties as best he can; this is part of what we mean by psychological preparation. It implies that the patient will be treated not as a pathological entity, but as a highly individualized complex of traits, interests, and requirements. The newly amputated patient must be assured that his disability will not prevent him from becoming a happy and productive unit of the society to which he must return.

Demonstrations by other amputees who are already successfully adjusted, and who are accomplished in the use of their prostheses, are extremely valuable for this purpose. Whenever possible, the physician or the hospital should arrange to have the amputee patient meet other amputees with similar or severer disabilities. The patient is challenged to match or exceed the accomplishments of the other man; more important, he is made to feel that he is not alone with his disability, that thousands like him have made adjustments of which he, too, is capable.

Films, slides, and lectures are valuable when live demonstrations are not feasible. Occasionally the hospital's social worker will be called in to assist with a specific personal or financial problem. Perhaps the patient will be encouraged to use the time spent in the hospital to explore educational or vocational opportunities. Whatever the means employed, psychological adjustment of the amputee should be considered throughout his entire rehabilitation program.

The primary purpose of amputation surgery is, of course, to arrest the pathological process. Second in importance is provision of a stump which will enable the amputee to wear an artificial limb with comfort and utility. When an open amputation must be performed because of the emergency nature of the operation, it should be performed at the most distal point of viable tissue rather than at the site of election. This will permit the final revision or reamputation to be performed at the site of election without unnecessary loss of stump length.

The aim of the final procedure is provision of a stump of optimum length shaped to allow proper fitting of the artificial limb. Four basic surgical procedures have been developed for leg amputation: the Syme's amputation, the below-knee amputation, the Stokes-Gritti amputation, and the above-knee amputation. While modifications may be necessary in individual cases, these four operations will satisfy the requirements of the vast majority of leg amputations.

The Syme's amputation provides a desirable end-bearing stump, utilizing the skin of the heel, which is biologically prepared for weight bearing. The tibia and fibula are transected at a point about ¼ in. proximal to the articular surface of the tibia. The os calcis is removed subperiosteally, preserving the skin of the heel for weight bearing, either with or without a prosthesis.

The site of election for amputations above the ankle is 5 to 6 in. below the knee, at which level optimum conditions of support and leverage obtain. A side-bearing stump is provided which takes the body weight evenly distributed at three pressure bearing areas, the internal condyle of the tibia, the head of the fibula, and the tibial tubercle. These stumps are ideal for wearing a prosthesis although shorter below-knee stumps can also be utilized

The Stokes-Gritti procedure for above the knee amputations provides an end-bearing stump able to meet excessive demands. The patella is fused to the cut end of the femur at the adducted tubercle, made at the flare of the femur. Like the Syme's amputation, this type of amputation utilizes skin that is biologically prepared for weigh bearing—in this case, the skin of the knee.

Leg amputees who have lost the valuable knee mechanism will find themselves considerably more restricted than the below-knee amputee, and the knee joint should be preserved whenever it is possible to do so. The site of election for the above-knee amputation is at the juncture of the lower and middle third of the thigh, but satisfactory stumps are possible at almost any level. I should be remembered that a stump which is too long is as unsatisfactory as one which is too short. In the above-knee stump, weight is transferred to the ischium, depending on the length and shape of the stump. Leg amputees with very short stumps, and patients with hip disarticulations, can be fitted with tilting table limbs, and simila prostheses can be used by hemipelvectomy patients.

Arm amputations are usually performed above the wrist, below the elbow, and above the elbow, but special procedures are also available to meet the needs of specific cases. The Krukenberg procedure, in which the forearm is split into radius and ulna, is a very valuable device fo the blind, double-arm amputee, who must retain tactile sensation in one of his stumps. The Krukenberg operation provides some prehensile power without necessitating the wearing of a prosthesis.

Kineplasty is another special technique which provides the arm amputee with excellent control over the

---

Read before the Section on Physical Medicine and Rehabilitation at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

artificial arm. The live muscle remaining in the stump is canalized and lined with skin, and the surgical defect covered. An ivory or plastic peg is inserted in the canal and is attached to the artificial arm by a system of levers. Thus the muscle which would normally activate the ablated hand is used to control the prosthesis.

A systematic program of after-care of the stump, in preparation for wearing a prosthesis, has as its objectives the prevention of contractures and the development of strong, painless, and properly shrunk stumps. Traction is applied postoperatively to accomplish closure of the wound in open amputations and to loosen the skin closure in primary flap amputations. Proper bed posture is essential to prevent contractures, and the practice of putting a pillow or sandbag under the stump cannot be too strongly condemned. When the amputee has recovered from his operation, the physical therapist will institute a program of passive and active exercises, designed not only to improve the stump, but to provide physical conditioning of the entire body. Massage, which may be indicated to reduce contractures in old stumps, is strongly contraindicated for fresh or painful stumps.

Shrinkage of the stump is accomplished through the application of elastic bandages. A 4-in. bandage is used for the below-knee amputee and a 6-in. bandage for the above-knee amputee. The below-knee amputee can usually be taught to apply his bandages himself, but the above-knee amputee will require the assistance of the nurse or physical therapist.

Advanced preprosthetic training of the amputee will include instruction in crutch walking and hopping, in addition to general physical conditioning and specific stump exercises. A complete program of preprosthetic training, under the supervision of competent physical therapists, can easily mean the difference between poor and excellent adjustment to the artificial leg. The prosthesis should not be fitted until the stump is properly shrunk and free of pain and contractures.

Provision of a satisfactory artificial limb is the responsibility of the physician as well as the limb maker. While the surgeon is not expected to become thoroughly familiar with the limb maker's art, he should have sufficient knowledge of prosthetics to assist his patient in the selection of an artificial limb.

The large variety of materials and designs in artificial limbs presents the amputee with a bewildering problem of selection unless he has professional guidance. The surgeon should coöperate with the limb maker to insure proper fit of the limb, a consideration far more important than the design of the limb or the materials of which it is made. Fitting depends primarily on proper measurement, secondly on proper construction of the prosthesis, and, finally, on the adjustment of the prosthesis to the patient's stump. Too many limbs lie idle in closets or bureau drawers while their owners lead wheelchair and crutch existences because weight bearing on the prosthesis is painful or the amputee has not been taught to use his new limb. If possible, the amputee should be fitted at a shop close to his home, to enable him to return as often as is necessary for adjustments and repairs.

The type of limb selected for the leg amputee will be influenced by his weight and occupation. Materials generally used include metal and willow wood, the latter preferable for children because the necessary frequent changes can be easily executed.

Selection of the prosthesis for the arm amputee is a far more complicated matter, and here we must consider the patient's entire personality as well as his physical requirements. The two basic functions of the artificial arm, dress and utility, may be combined in any proportion to meet the specific needs of the individual patient. Teachers, lawyers, and other persons whose work brings them into contact with the public, but who do not use their hands a great deal, usually require only a light dress arm with minimal function. The farmer or laborer, on the other hand, requires the maximum function possible, and he must frequently sacrifice appearance to utility and wear a mechanical arm. An array of special devices is available for the unusual or complicated case. The Krukenberg procedure, previously referred to, should be performed on one stump of the blinded, bilateral arm amputee. A functional prosthesis can then be applied to the stump of what had been the dominant hand.

The kineplastic procedure is ideal for bilateral arm amputees, since this technique provides a high degree of prehension and control. The kineplastic arm can be worn with either hand or hook, the former for cosmetic purposes and the latter for greater utility.

Training in the use of the prosthesis is the most essential element in successful rehabilitation of the amputee. An artificial limb is a sensitive and delicate instrument, and the amputee cannot be expected to become adept in its use without professional instruction. Ideally this training is carried out in a rehabilitation center, but it can be done in a general hospital with good physical and occupational therapy departments and staff members who know amputee training techniques.

A four week training program will generally suffice for the single-leg amputee, though more time will be required to train a man who has lost both legs. During the first week the leg amputee learns to apply his limb and to balance on it. During the second week he is taught to walk on level ground, and by the third week he is walking on irregular terrain and up and down stairs. The fourth week is devoted to advanced instruction in sports activities, and completion of the general gymnastic program that has been carried on throughout the entire period of training. At the time of discharge the single-leg amputee will be walking easily with no support, and the double-leg amputee can navigate successfully with the help of one cane.

Before the rehabilitation program can be considered complete, the amputee should be assisted with whatever personal or vocational adjustments are necessary. If he cannot return to his former occupation, he may be referred to a center for vocational guidance and training. Rehabilitation does not end until the patient has received all the restoration of which he is capable.

It is obvious that the type of complete service outlined above cannot be provided by the physician alone. The teamwork of many specialists is required, with the physician at the head of the rehabilitation team. The services of the physical therapist, the occupational therapist, the limb maker, the rehabilitation nurse, and the vocational counselor are merged to provide a total program individualized to meet each patient's needs.

The community, too, is a member of the rehabilitation team, for the amputee cannot be said to be rehabilitated if he will not be accepted by the community to which he must return. One of the major aims of rehabilitation is education of the public to the potentialities of the amputee; in a sense the public must also receive "psychological preparation." Amputations should never be regarded as insurmountable obstacles to a normal and satisfying life.

The management of patients with double or complicated amputations demands special skills. Illustrations of how the basic rehabilitation program is adopted to meet the needs of these severely disabled persons are supplied by the following case reports.

CASE 1.—A young Greek soldier was severely injured when a land mine exploded in front of him, resulting in total blindness and necessitating amputation of both arms below the elbow. The young man was sent to the United States through the auspices of the Greek War Relief for rehabilitation at the Kessler Institute for Rehabilitation in West Orange, N. J. A medical case worker assisted him in overcoming certain psychological difficulties induced by the severity of his injury and complicated by the language barrier he experienced in this country. A Krukenberg procedure was performed by the orthopedic surgeon on his left stump, and the patient rapidly learned to manipulate the bones of the forearm as a prehensile tool. A kineplastic operation, performed on the muscles of the other stump, enabled him to be fitted with a kineplastic prosthesis. The occupational therapist taught him to use his prosthesis for the routine pursuits of life, and he learned to feed, dress, and groom himself. A case worker from the New Jersey Commission for the Blind was assigned to teach him braille and orientation, and the institute physical therapist taught him balance and coordination. This man is now able to read braille with the unfitted stump and is able to care for his personal needs. He has since returned to Greece.

CASE 2.—A coal miner, injured in a rock fall, suffered a broken back which caused total paralysis below the waist. Several months after his injury severe decubitus developed, which necessitated midthigh amputation of both legs. An unsuccessful attempt to remove urinary calculi left the patient with a draining abdomin fistula at the time of his admission to the institute. Plastic surge was performed to close the remaining decubitus ulcers; th calculi were removed, and the fistula closed by the urologic su geon. An intensive program of physical reconditioning ar amputee training was started. The patient was first fitted wi short artificial legs and taught balance and simple walking tec niques. As his progress improved, his artificial legs were lengt ened, and he was taught a faster gait. At the time of his dischar the patient, a paraplegic, double, above-knee amputee, cou ambulate on artificial legs and crutches, and his medical probler had been solved. He now operates his own restaurant in h home town.

CASE 3.—A patient with triple amputation was admitted the Kessler Institute. As a result of an electrical accident bo arms were amputated below the elbow, and one leg was amp tated above the knee. The patient was fitted with two kineplas prostheses, and the occupational therapy department train him in the use of these devices for a variety of personal and voc tional activities. The patient became increasingly adept with h artificial arms, and at the time of discharge he was able to u the arms for writing, shaving, dressing, eating, and some ty of manual work. A standard above-knee prosthesis was p vided, and the patient received physical therapy and walki instruction. He has since returned to work, able to ambul successfully and manage his triple prostheses to meet the mands of his daily life.

The significant feature of these case histories is t teamwork that was provided by the medical and prof sional staffs to solve the numerous problems of th severely disabled persons. Rehabilitation is seen as integrated series of services focusing the experience many minds, the skills of many sciences, and the valu of many techniques on the single objective of restori the disabled to useful life. As applied to the amputee, brings the surgeon, limbmaker, therapist, and commun together in an organized attempt to rebuild the patient economic independence and social satisfaction.

53 Lincoln Pk.

LAME BACK

SOME COMMON CAUSES AND CONSERVATIVE TREATMENT

Frank R. Ober, M.D., Boston

There has been and there still is a great tendency to ascribe all backaches to one cause—e. g., for many years the term "sacro-iliac dislocation" has been held in great vogue; latterly this seems to be going out of fashion, and the diagnosis of "ruptured disk" is in the ascendancy. All too often a snap diagnosis is made without reference to history or physical findings. Too many patients suffer from backache after adequate removal of the displaced nucleus pulposus. How to go on from there is the problem. There are many causes of acute and chronic backache, so that one single label is not the answer.

ETIOLOGICAL FACTORS

Fundamentally the reason for mechanical pain in the back is an abnormal change in the normal physiological curves of the spine. It is the duty of the physician to find out if possible the condition responsible for the difficul The main etiological factors fall into six groups: (traumas, (2) bad posture, (3) congenital malform tions, (4) diseases of spinal bones and joints, (5) mal nant disease, and (6) diseases outside the spine.

In general, there can be severe low back pain with limitation of motion in the spinal column per se, a there may be no evidence of pathological condition x-ray examination. On the other hand, there can be good deal of bone damage as shown by x-ray and backache. Patients having lumbar spines which sh more or less spur formation that has been going on f many years suddenly have an acute attack of pain, mus spasm, and even sciatic pain. These patients recover, b the pathological picture does not change. Furthermo there may be intermittent recurrence of backache wi complete freedom from pain during the intervals.

Trauma.—The commoner traumatic lesions are co tusions, sprains, strains, dislocations, compression fra

---

Read before the Section on Physical Medicine and Rehabilitation at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

tures, and ruptured discs. All these are characterized by pain, muscle spasm of the erector spinae muscles, and limitation of motion of the lower part of the spine. Sciatic pain may be present, and sometimes there is a lateral list of the spine. These symptoms mean a lame back and are usually present in nearly all conditions in which there is irritation of the low back region from whatever cause.

Bad Posture.—This includes postural attitudes in standing, sitting, lying, and walking. Examples are standing with the chest flat and thrust backward over the pelvis, head forward and shoulders sagging, also habitual standing on one leg, which produces faulty attitudes; sitting in a slouchy manner with the buttocks out on the edge of the seat and the chest caved in or on a seat which does not fit; lying in curved positions, especially on soft or sagging beds. The postural attitudes in walking usually exaggerate those of standing. A short leg results in a total scoliosis with the leverage power greatest at the lumbosacral or sacro-iliac joints. The short leg is determined by putting lifts under the heel until the pelvis is level and the spine plumb. Foot strain pain may be referred to the lower back and also strain from a prominent abdomen, short posterior leg muscles, and contracted fascia lata producing a lumbar lordosis.

Congenital Abnormalities of Spine.—These may be responsible for back pain, first, because these abnormalities interfere with the normal mechanics of the spine and, second, because the backs of these patients are not always as strong as those of normal persons.

Arthritides of Spine.—The two common types of arthritis of the spine are osteo and rheumatoid arthritis. Marie-Strümpell, gonorrheal, typhoid, and paratyphoid types are less common, as also is degeneration of one or more intervertebral discs.

Infections Involving Spine.—These are tuberculosis; which is comparatively rare, and osteomyelitis.

Affections of Bones of Spine.—Osteoporosis seen in the aged, in hormone imbalance, and in disturbances of the parathyroid gland, Paget's disease, osteomalacia, and aneurysm of the aorta may be the cause of back pain.

Malignant Diseases.—Sarcoma, Ewing's tumor, myeloma, carcinoma, Hodgkin's disease, and leukemia all may cause destructive lesions of the vertebrae and must be considered in making a diagnosis.

Diseases Outside Spine.—There are many diseases outside the spine which have symptoms referred to the spine. In many acute infections, local or general, there is often backache and spasm of the erector spinae muscles —e. g., the early prominent symptom of smallpox is severe pain in the low back. Peptic ulcer, malignant disease of the stomach or duodenum, and retrocecal appendicitis may cause severe pain in the spinal region.

Diseases of Pelvis.—Tumor and cancer of the ovaries or uterus, pelvic adhesions, displaced uterus, bladder stone, prostatic diseases—all these may cause low back pain. Conditions involving the retroperitoneal region often produce pain and muscle spasm in the lumbar region. Among the commoner of these are abscess of the kidney, perinephritic abscess, retroperitoneal abscess, stone in the kidney, in the pelvis of the kidney, and in the ureter, and kinks in the ureter.

Pregnancy, especially in the later months, often produces low back strain. After delivery there is often marked weakness of the abdominal muscles, which results in chronic backache.

Fatty Tumors and Hematomas.—Fatty tumors and hematomas in the gluteal region should always be sought for, since they often cause sudden acute attacks, frequently disabling. These tumors are found beneath the gluteus maximus muscle, and a portion of one extrudes through the vascular spaces in the deep fascia just below the iliac crest and near the top of the sacro-iliac joint. Sciatic pain frequently accompanies the extrusion.

It must be remembered that there can be severe backache, especially over the posterior surface of the sacrum, without muscle spasm or limitation of motion in the lumbar spine. These patients usually have a contracted fascia lata, short posterior leg muscles, functional scoliosis, prominent abdomens, or chronic foot strain.

Finally, neuroses, chronic emotional disturbances, malingering, and compensation problems all may have their symptoms, either real or fancied, located in the low back region.

It is obvious that every effort should be made to find the cause of trouble before beginning therapy. A snap diagnosis may be futile and fatal. The x-ray examination must be complete and thorough. If the anteroposterior and lateral x-rays do not show pathological condition, it is often necessary to take x-rays of the oblique view; also standing anteroposterior x-rays with side bending and lateral views in extension and flexion may be required.

TREATMENT

The treatment of lame back may be separated into four stages: (1) the acute stage, (2) the subacute stage, (3) the chronic stage, and (4) the rehabilitation stage. All this is based on the assumption that all conditions predisposing to low back pain which are not concerned with those causes which enter into the mechanism and physiology of the spine have been removed where possible.

Acute Stage.—This varies from a mild attack to a very severe and disabling one. In the mild, short-lived attack use of a transverse double-thickness adhesive plaster strapping will usually suffice. In the severer attacks bed rest on a firm mattress is indicated. (Some patients are not comfortable on a hard bed.) Sedatives, such as the salicylates, codeine, meperidine (demerol®), and even morphine may be necessary. Sedatives relieve both the pain and muscle spasm.

Heat in the form of hot packs or a heat lamp at intervals of four to six hours for periods of 15 to 20 minutes often gives great comfort. If sciatic pain is present, a pillow under the knee relaxes the nerve and may help to relieve some of the pain. The patient should assume the position of greatest comfort. Sometimes continued and constant bed rest produces increased discomfort; in that case the patient should be allowed up for short periods, since the postural change seems to relieve pain.

Subacute Stage.—When the very acute phase subsides gradually, but certain movements tend to increase the discomfort, the application of local heat plus gentle massage is beneficial. If there is no sciatic pain, the patient is taught to compress his buttocks slowly and firmly 25 times three of four times daily and to raise his head and shoulders off the bed or table a short distance, holding this position for three or four seconds, repeating this 25 times three or four times a day.

A back support is indicated at this time. The best support is a properly made corset, which is hard to obtain. An efficient corset is so constructed that it fits the back in both the sitting and standing positions. It must give an abdominal lift. The cloth must be cut so that the iliac crests are let out into it; otherwise the corset will ride up. The iliac crests never change, but the soft parts do. Pressure from the corset often causes alterations in the soft parts, increasing the pressure on the crests of the ilia, thus defeating the purpose of the corset, which is to restore normal balance of the spine and pelvis. In this case the corset must be altered to fit.

There have been many braces designed for lame backs, but in my opinion they are not as efficient as a properly fitted corset, simply because no brace can follow the contours of the back in both the sitting and standing positions, while a corset will do so.

Chronic Stage.—This stage is usually a continuation of the acute and subacute stages. However, many lame back patients have never had an acute attack.

The treatment of the chronic type of back condition is to avoid any motion that causes discomfort or pain and to persist with adequate measures of protection until pain has disappeared and motion has been restored without spasm or pain. Patients who stand with one side of the pelvis lower than the other and who have low back pain must have the pelvis leveled with a lift under the heel of the shoe. Many lame backs are relieved by this simple procedure, even those with pain in the sciatic nerve. Those who have bilateral limitation of straight leg raising due to contracted posterior leg muscles or fasciae latae may be relieved by raising the heels of both shoes.

Rehabilitation.—Exercises to relieve the fascial contractures should be given but not if sciatica is present. Next, the anterior thigh structures should be stretched and, finally, the posterior leg contractures. When the acute low back symptoms have subsided, exercises to develop the corset muscles of the patient—that is, th gluteal and abdominal muscles—should be carried o until their function is normal.

As soon as these muscles have sufficient tone an strength more attention should be paid to correcting ba posture so that in time the physiological curves of t patient will be restored to normal.

A common exercise prescribed for lame back is to ha the patient bend over. Lame backs are often caused bending over. It would seem, then, that such an exerci should not be performed. Furthermore, it does nothing restore the physiology of the spine.

In cases of contracted spinal muscles following an tack, stretching these muscles may be accomplished two ways. The first is to have the patient flex his kn and thighs, then grasp his knees with his hands and slo flex his trunk, maintaining the position for 20 or 30 s onds and then relaxing, repeating the maneuver 10 or times. A second method of stretching is to stand with knees extended and bend forward, allowing the head a body to hang in a relaxed manner for a minute at a ti for 10 or 15 times once or twice a day.

No exercise should be performed that causes disco fort. Finally, after contractures are removed and the c set muscles are normal, the posture must be restored order to help prevent or at least minimize any fut attacks.

SUMMARY

Ruptured nucleus pulposus is not the sole cause lame back. There are many diseases of the spine a many outside the spine itself which may produce pai the back. Treatment of the lame back per se depends the acuteness of the attack. Finally, physical ther measures designed to remove inhibiting contractu restore muscular tone and function, and correct post will result in a large number of cures.

234 Marlborough St.

MULTIPLE POLYPOSIS

RESULTS OF FULGURATION OF POLYPS IN DISTAL PORTION OF COLON AFTER ILEOSIGMOIDOSTOMY AND COLECTOMY

Newton D. Smith, M.D.
and
John R. Hill, M.D., Rochester, Minn.

Present knowledge concerning multiple polyposis (congenital or hereditary polyposis) indicates the seriousness of this disease and an almost invariable termination in single or multiple carcinomas. Ideally, therefore, it would seem best therapeutically to remove the entire colon. Because of the consideration of the patient's comfort, his social life, and the adverse mental reaction of some patients having an ileostomy, it seems necessary to deviate, if safely possible, from the absolute ideal. We are concerned with the success of such a deviation.

PRELIMINARY CONSIDERATIONS

In the group of cases studied, the patients had b treated surgically by ileosigmoidostomy and entire moval of all of the colon proximal to the anastomo The surgeon's effort had been to make the ileosigmoi stoma low enough in the sigmoid so that the resid portion of the colon could be thoroughly obser through a sigmoidoscope (25 cm. long) and any pol fulgurated through such an instrument. If this could done, it seemed it would permit the patient to conti his regular occupation and social activities and have, all practical purposes, normal bowel function.

We have studied 27 cases in which the associat surgical procedures mentioned were accomplished a

---

From the Section on Proctology, Mayo Clinic.

Read before the Section on Gastro-Enterology and Proctology at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

fulguration was applied to those polyps in the distal 25 cm. of the colon. A number of considerations deserve special scrutiny. The ultimate value of these complementary procedures must be judged by results observed over a long period of time and these results compared with normals to obtain a true evaluation. It will be apparent that we are presenting an interim report rather than a completed study and that many years may be required before all the facts may be gathered.

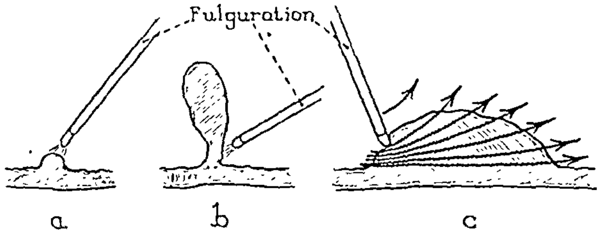


Fig. 1.—The method and site of applying the spark from the fulgurating electrode to (*a*) a small sessile polyp, (*b*) a pedunculated polyp, and (*c*) a larger sessile polyp.

The method of accomplishing the fulguration of the polyps may be of interest. We fulgurate the polyps with monopolar or Oudin current through a metal sigmoidoscope 25 cm. long. We do not apply the fulgurating electrode directly to the polyp but work with an intervening spark gap of about ⅛ to ¼ inch (3 to 7 mm.) (Fig. 1). The regular 25 cm. Buie sigmoidoscope with an auxiliary suction tube incorporated in the instrument to remove smoke is employed. The auxiliary suction tube is attached by means of a rubber tube to a Y connector and this to the suction. The usual suction tip employed for the removal of feces, mucus, fluid, and blood, if necessary, is attached to the other arm of the Y connector. Clamps are placed on both rubber tubes attached to the Y connector in order that one tube may be closed while the other is being employed. This may seem complicated, but in practice it proves to be a simple mechanical method to provide suction for each purpose (Fig. 2).

Another question that may prove puzzling is where to begin the fulguration and how to proceed. It might seem equally logical to begin at the upper point to which the sigmoidoscope can be inserted and fulgurate distally or to begin in the anus and fulgurate proximally. In practice, it probably makes little difference. Our personal choice has been to begin at the anus and fulgurate a few polyps on the first occasion to determine the patient's tolerance and reaction to the burned surface. In some instances patients will have an elevated temperature and considerable abdominal discomfort, and others will tolerate the fulguration of a large number of polyps without any untoward reaction. By beginning at the anus and gradually fulgurating proximally, the patient seems to learn to cooperate more satisfactorily and the surgeon also has an opportunity to observe the previously treated area. Usually the fulguration is carried on daily; however, in some particularly apprehensive patients, it would seem best to permit an occasional day of rest; in spite of their willingness, many patients tend to reach a point of saturation, after which they become less cooperative and a day of "vacation" will assist them in returning to a more cooperative attitude. If the polyps are fulgurated first and the ileocolostomy and colectomy are to follow, it is well to allow 10 to 14 days between the completion of the fulguration and the subsequent surgical procedure, in order to permit the acute inflammatory reaction subsequent to the fulguration to subside. This prevents limitation of the surgeon's procedure when he attempts the abdominal portion of the operation.

It would be of little value to enumerate specifically the number of individual fulgurations in each case. In some instances we would find it necessary to continue fulguration daily or almost daily for three weeks, and at the time the patients returned for re-examination we might be able to complete the fulguration of new or recurrent polyps at one time. Our general purpose in the Section on Proctology at the Mayo Clinic is to clear the bowel of the polyps thoroughly just before or soon after the ileosigmoidostomy and colectomy, and then to re-examine the distal portion of the colon every three months for two or three times, after which we extend the interval to six months and then once each year, or more frequently, depending wholly on the rapidity of the reappearance of polyps in each patient. Even after prolonged fulguration, there is usually little or no distortion of the contour of the bowel except in those cases in which heroic fulguration is attempted.

Some patients fail to appear as regularly as they should for re-examination following the previous surgical treatment and fulguration because of financial reasons or because of the inability of the patient to evaluate his problem satisfactorily and to understand the need of continued observation; this occurs in spite of our emphatic instructions. Some patients seem to become careless because they feel well and have normal function. The patient's failure to return for examination seems to be the weakest link in the surgical and subsequent procedures. It is interesting to observe that over a rather prolonged period of observation these patients do not seem to suffer remarkably increased incidence of carcinoma.

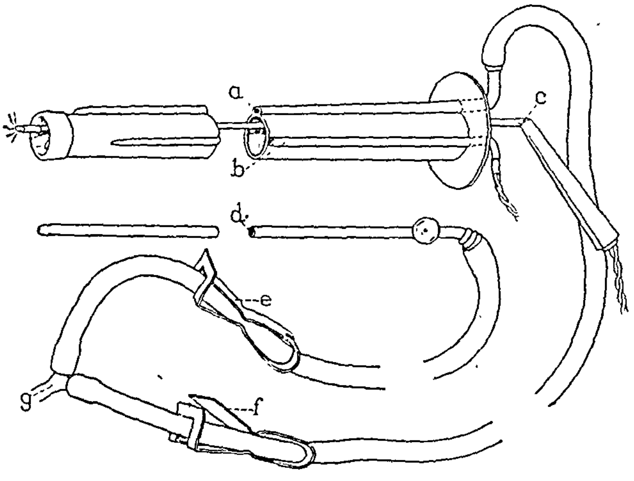


Fig. 2.—Fulgurating sigmoidoscope 25 cm. long. (*a*) Suction tube for the removal of smoke. (*b*) Tube for light carrier. (*c*) Insulated fulgurating electrode. (*d*) Suction tube for the removal of feces, fluid, blood, and mucus. (*e*) and (*f*) Clamps to direct the suction to the tube employed. (*g*) Metal Y tube connected to the source of suction and the two rubber hoses leading to the suction tubes. (Reprinted with permission from Buie, L. A.: Practical Proctology, Philadelphia, W. B. Saunders Company, 1937.)

The difficult problem at times seems to be: Should the polyps be fulgurated first, or should the ileosigmoidostomy and colectomy be accomplished first? In practice, there is no fixed rule that would apply in all cases. Obviously, if it is a borderline condition in which the polyps are so numerous that their thorough destruction by fulguration seems doubtful, it would be advisable to fulgurate first. If a malignant lesion or lesions have been diagnosed roentgenologically higher in the colon, then it would seem equally obvious that the ileosigmoidostomy and colectomy should be done prior to the fulguration. In some instances in which there are comparatively few polyps, and these small and widespread with no roentgenologic evidence of other than polypoid lesions proximal to them, either procedure may take precedence. In other instances, the patient may wish to postpone the colonic operation for a short time; in such circumstances, the fulguration frequently can be completed during the interval between the original examination and the ileosigmoidostomy. In general, the decision concerning which should be accomplished first must rest with the surgeon after he has all of the diagnostic evidence, and his conclusion frequently will need to be modified by the patient's desires.

RESULTS

Two of the 27 patients in the group studied died from bronchial pneumonia soon after the abdominal operation was accomplished. The death of another resulted from carcinoma two years after the colectomy and ileosigmoidostomy were accomplished, but, at the time the colon was excised, it was noted that there were two carcinomas; the malignancy of these was graded 1 (Broders' method), and they were type B according to Dukes' classification. The sister of the last-mentioned patient also succumbed to carcinoma originating in the sigmoid above the level that could be reached with the sigmoidoscope. The carcinoma originated 34 months after the ileosigmoidostomy. In the latter instance, the patient postponed the colectomy too long, although it had been urged on numerous occasions. Two other patients in the group studied died five and eight years, respectively, after treatment was instituted from causes other than multiple polyposis. The remaining 21 patients are living and have been under our observation for 6 to 19 years.

The most frequently observed symptoms prior to treatment were bleeding, diarrhea, abdominal cramps, and constipation. Twenty-four of the 27 patients observed bleeding with evacuation of stool. Twenty-one complained of diarrhea, 11 complained of having had abdominal cramps, 3 noted constipation, and in 1 case no symptoms were observed. The duration of the diarrhea varied from 3 weeks to 30 years, and bleeding from 2 to 13 years. Abdominal cramps were noted for four years in one instance, and for much shorter intervals in all others. This brief résumé of the outstanding symptoms emphasizes further the need for sigmoidoscopic examination when any symptoms referable to abnormal colonic function occur.

The ages of the patients in this group at the onset of the symptoms is of special interest because of the great divergence between the age of the youngest and that of the oldest. One patient could not remember when he did not have diarrhea. Four patients observed the first symptoms during the first decade of their lives, 6 in the second, 6 in the third, 1 in the fourth, and 2 in the fifth. The remaining seven could not set any specific date o were so vague in their statements that we did not fee justified in including them in this evaluation (see accompanying table).

Ages of the Patients, in Decades, When They First Noted Symptoms, When They Were First Examined Sigmoidoscopically, and Present Ages

	No. of Patients by Decade Groups							
Age in decades	1	2	3	4	5	6	7	8
Symptoms first noted	4	6	6	1	2	..	..	..
Time of first sigmoidoscopy	..	2	11	8	2	3	1	..
Present age	..	..	3	4	10	3	1	1

The ages of the patients at the time of our first observations varied remarkably from those at the onset of th symptoms. Two were first observed during the secon decade of their lives, 11 in the third, 8 in the fourth, in the fifth, 3 in the sixth, and 1 in the seventh.

Two families represented by several patients in th group studied afford an interesting opportunity for cor jecture, but without further evidence it seems unwise t attempt to reach a conclusion. The first family is repr sented by a brother and sister, who died as a result c carcinomas developing before or after ileosigmoido tomy, fulguration, and, in one case, colectomy. Th woman died at the age of 33 and the man at the age c 37. In the woman a carcinoma developed in the sigmoi above the level that could be reached with the sigmoid scope. This was possible because of the patient's relu tance to follow the advice she received to have a cole tomy. The man had two carcinomas, Grade 1 (Broder method) and Type B (Dukes' classification), at the tim of the colectomy. The fact that other members of th same family in preceding generations succumbed t carcinoma in the colon at about the same age or withi the next decade would suggest that there was, in thi family, a hereditary age relationship between the deve opment of carcinoma and the presence of multipl polyposis. The second family would also tend to sugge the same age relationship. This family is represented b at least seven members of both sexes, but they were n all included in the group studied. The first members c these families were two women, aged 56 and 63, wh had carcinoma in the distal 10 cm. of the colon at th time they were first observed. They also had multipl polyposis. Each of these women, and a brother, ha several children who had multiple polyposis, and all th children are in their fifth decade of life or older withou any evidence of carcinoma having developed. In thes families it would seem that the tendency for carcinom to develop, while not absent, is less marked or retarde

Parenthetically it may be of interest to mention patient not included in the group, who has passed throug two full-term pregnancies without untoward reaction either in her general health or in the development c polyps. One female patient in the group studied had bee treated surgically for bilateral carcinoma of the ovar Grade 2, prior to the diagnosis of multiple polyposi seven years ago. She is still living.

The treatment and periodic observation have seemed satisfactory so far, inasmuch as none of the patients except the two mentioned has died as a result of the disease for which he was treated or any related disease. There seems to be a satisfactory explanation of these two deaths, which does not wholly discredit the suggested treatment. The employment of antibiotics and the increased understanding of surgical problems have reduced the number of postoperative deaths and complications.

At the present time the ages of the 22 living patients vary from 20 to 70 years. Three are in the third decade of life, 4 in the fourth, 10 in the fifth, 3 in the sixth, 1 in the seventh, and 1 in the eighth. We are seeing additional patients who have been treated similarly, and in general their progress parallels that of this group, with no unusual developments.

It is a sweeping statement to make, but all the patients seem to be living and working without appreciable handicaps. The occupations include housewife, student nurse, bartender, farmer, credit manager, Salvation Army officer, cattle buyer, and electrician. Most of the patients seem happy and, in spite of an adjusted outlook, anticipate their future with enthusiasm.

SUMMARY AND CONCLUSIONS

It appears that ileosigmoidostomy, with the removal of all of the colon proximal to the anastomosis, and fulguration of the polyps in the remaining segment of the colon, produces a satisfactory solution to the difficult problem of polyposis. This solution of the patient's problem permits normal activity and outlook. Periodic examinations must be continued to obtain the optimal result. The age at which carcinoma occurs in particular families in which multiple polyposis is common may be peculiar to that family. The employment of antibiotics and increasing knowledge relative to the solution of some problems associated with extensive operations on the bowel have decreased the postoperative mortality and morbidity of these patients. The study should be continued.

PRACTICAL APPLICATIONS OF PROGRESSIVE RESISTANCE EXERCISES

Arthur L. Watkins, M.D., Boston

The prescription of any of the many varieties of therapeutic exercise should be detailed and specific depending on their purpose. For example, the aim may be to improve coordination, reeducate muscles, increase range of joint motion or enhance endurance. The purpose of progressive resistance exercise is primarily that of increasing strength. This technique is based on the sound physiological principle that one must contract against a resistance which calls forth a near maximal voluntary effort and that the resistance must be progressively increased in order to significantly and rapidly improve muscular strength or torque. There is a large body of evidence based on empiric practice that this is true for normal persons, as, for example, in the training of professional weight lifters. For a more detailed discussion of the physiology of this type of exercise the reader is referred to a recent publication by Hellebrandt.[1]

The application in clinical medicine of the principles of progressive resistance exercise is primarily due to the work of DeLorme [2] and dates back only to 1944. Because of his early successes, its use in a wide variety of pathological conditions has been studied. It is the purpose of this paper to draw attention to the more frequently seen clinical entities in which progressive resistance exercise has been demonstrated to be of practical value.

PRINCIPLES OF TECHNIQUE

Experience has proved that in order to develop muscle strength by resistance exercises at an optimum rate, not more than approximately 30 repetitions of a single exercise each day are necessary. The usual practice is to initially determine by test loads that resistance which the patient can move through normal range of motion of the joint 10 times and no more. This is known as the 10-repetition maximum and forms the basis for the exercise routine. For purposes of warm-up one starts with 50% of the 10-repetition maximum, which is completed 10 times, then a short rest period with an increase in the load to 75% of maximum, which is again repeated 10 times, and finally the 10-repetition maximum itself is the last exercise stint. Best results are usually obtained by daily exercise of 30 repetitions as described for each joint motion. This number of 30 repetitions is, of course, arbitrary and may have to be reduced in some instances and may be slightly increased in others. It has been shown that by increasing the repetitions to 50 or 100 daily the efficiency of this method of exercise is greatly reduced, since it is generally impossible for persons to exert maximum effort repeatedly. It has also been discovered that it is important to have rest periods of one or two days each week.

In order to make proper progression of resistance, one day each week is set aside as test day, at which time the exercise load is increased to determine a new 10-repetition maximum. During the following week this new figure is used as the 100% value, and new values for the three sets of 10 repetitions are based on it. During the first few days of exercise there may be a rapid increase in the resistance that can be overcome, which is undoubtedly due to learning how to exercise, rather than to a true increase of strength. After this one can generally expect a fairly rapid and steady increase for a number of weeks, followed later by a leveling off period in the rate of improvement of strength. The total length of time one

---

Assistant Clinical Professor of Medicine, Harvard Medical School; Chief of Physical Medicine, Massachusetts General Hospital.

Read before the Section on Physical Medicine and Rehabilitation at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

[1] Hellebrandt, F. A., in DeLorme, T. L., A. gressive Resistance Exercise: Technic and Appleton-Century-Crofts, Inc., 1951, p. 6.

[2] DeLorme, T. L.: Restoration of by Exercises, J. Bone & Joint Surg. 1945.

should exercise, of course, is based on many individual factors, and these will be discussed further in more detail.

Although very heavy weight loads may be utilized in order to develop potentially strong muscles, such as the quadriceps, techniques have been developed for exercising muscles of poor grade which are unable to move a segment of the extremity against gravity. This has been made possible by methods of counterbalancing or positioning, so that gravity assists the muscle in exercise.

When counterbalancing is necessary, one determines the minimum weights necessary to allow 10 repetitions through full range of motion, and the 10-repetition minimum figure is accordingly determined. In this instance the weight loads are decreased instead of increased until the muscle is strong enough to move the extremity freely against gravity.

In order to get proper results from this method of exercise, it is important that great attention be paid to all details of technique. This includes proper positioning and securing of the patient so that he can comfortably and safely exert a maximum effort. The apparatus used should be of sturdy construction, free of the danger of breaks in equipment, which could cause sudden strains. It should also allow for ease of operation by the therapist and should be standardized so that the same positions and resistances can be obtained from day to day. For this reason several years of research have gone into the design of equipment which has been developed to provide safety, efficiency, and ease of operation. To use such equipment properly, however, requires a period of training and experience by the therapist and thorough familiarity by the physician in order to write a prescription properly. Literature on this subject is now available.[3]

TRAUMATIC CONDITIONS

Historically this method of exercise was first used to develop quadriceps power following injuries around the knee. From the point of view of frequency, progressive resistance exercise for developing power of knee extension is still leading in importance. These resistance exercises have been of proved value in regaining full stability and strength following athletic injuries, such as sprains and strains, and are particularly important in the care of football players. In order to prevent recurrence of knee injuries, one should make certain that quadriceps power is at least equal to that of the normal extremity of the patient, and, for a patient with ligamentous injury, it may be wise to increase the strength above the normal. Experience has shown that this can be done safely with proper technique, in which a well-fitted aluminum boot and securely applied weight is used under the guidance of a trained technician.[4] Similarly, these resistance exercises may be utilized effectively after meniscectomy as soon as healing of the surgical wound has occurred, usually in about two weeks' time.

Good results have also been obtained in increasing knee function both as to range of motion and strength of musculature following fractures of the femoral shaft, including the supracondylar region, and fractures of the tibia requiring immobilization of the knee.[5] In these instances it is safe and effective to give progressive resistance exercises to develop musculature before allowing weight bearing. With limited motion special positioning may be necessary. For example, the patient may do combined hip and knee extension in the sitting position, with adjustment of apparatus to fix range of motion to the limits of the knee at the time, or the patient may exercise in the prone-lying position, with an overhead pulley to which the weights are attached to provide resistance while the muscle is assisted by gravity. It is usually valuable also to exercise the knee flexors, which are frequently subnormal in strength.

Backs.—We all know that the treatment of back strain of traumatic origin, without disc and spinal root lesions, presents a therapeutic challenge. Recurrences are all too common following recovery from acute attacks. One method of approach is to attempt to improve trunk musculature, which is weakened by disuse atrophy during the period of immobilization required by acute symptoms. If the patient must return to a fairly heavy type of work, it is essential that proper trunk musculature be developed, and techniques for utilizing the principle of progressive resistance have been developed. It should be emphasized that it is of utmost importance to have a strong, firm, exercise table and maximum support of the pelvis and lower extremities. Trunk flexion and extension exercises can then be given safely and heavy exercise loads gradually developed to fully strengthen the powerful trunk muscles.

These same exercises may be used to advantage to enable patients to discard back braces and other supports worn for recurrent attacks of back strain on a mechanical or postural basis. This is especially true in the case of women with poor abdominal musculature and habits of little physical activity. In after-care of vetebral fractures, hyperextension exercises can be made more effective by utilizing progressive resistances.

Amputees.—An obvious application of progressive resistance exercise is in developing the strength of the upper extremities for patients with lower extremity amputations and also in developing the strength of muscles of either lower or upper extremity stumps. Passive stretching alone usually cannot be counted on to overcome hip flexion contractures but must be accompanied by strengthening exercises for the hip extensors, and with special adaptation of equipment the principle of progressive resistance may be successfully utilized.

NEUROLOGICAL CONDITIONS

In considering diseases of the nervous system producing muscular weakness, one first of all thinks of anterior poliomyelitis. After several years of study it has been the conclusion of my colleagues and I that this method of exercise has little role in the care of patients during the acute phase of the disease while pain and muscle tenderness are present. We have used progressive resistance exercises during the first three months of convalescence for selected muscle groups in severely involved patients. In view of the known variability in degree and rate of spontaneous recovery of muscle power in this disease, we have been unable to conclude definitely that this method of exercise offers significant superiority over the usual methods of muscle reeducation employed in treatment. It should also be pointed out that for this method of exercise to be effective the patient must be able to cooperate fully and make a maximum muscle exertion, so that it cannot be employed in the treatment of infants and young children.

---

[3] DeLorme, T. L., and Watkins, A. L.: Progressive Resistance Exercise: Technic and Medical Application, New York, Appleton-Century-Crofts, Inc., 1951, p. 245.

[4] Gallagher, J. R., and DeLorme, T. L.: Use of Technique of Progressive-Resistance Exercise in Adolescence, J. Bone & Joint Surg. 31-A: 847 (Oct.) 1949.

[5] DeLorme, T. L.; West, F. E., and Shriber, W. J.: Influence of Progressive-Resistance Exercises on Knee Function Following Femoral Fractures, J. Bone & Joint Surg. 32-A: 910 (Oct.) 1950.

In later convalescence, when the natural expected recovery rate is slow or minimal, progressive resistance exercise has proved to be valuable for muscles of all grades between poor and good, and there is some evidence to indicate that the partially innervated muscles of the patient with residual weakness from poliomyelitis will respond by increases in strength similar to normal muscles weakened by disuse, although of course the final end result quantitatively will not be the same.[6] One of the most striking examples of the value of such exercise in late convalescence is illustrated by the following case.

In G. S., 27, an insurance salesman, acute poliomyelitis developed in November, 1946, with severe paralysis of the abdominal and back muscles and weakness of both lower extremities, the left being more involved than the right. He was hospitalized for three months, receiving recumbent muscle reeducation. This was continued at home, and by July, 1947, he was learning to use crutches, wearing a left short leg brace. In November, 1948, two years after the onset, he was referred for progressive resistance exercises; he still needed crutches and a short leg brace. His residual paralysis was such that he had no more than a trace of abdominal muscle power and only poor low back extensor musculature. All muscles of the right lower extremity were good to normal, except for the hip muscles, which were in the low fair grade. On the left, hip muscles were in the poor grade and quadriceps was only fair minus.

His progressive resistance program consisted of exercises for both hip and knee flexors and extensors and hip abductors and trunk flexion and extension. He received treatment three to four times a week for over two years, since he continued to show improvement. For example, his left knee extensor exercise load increased from 7½ to 65 lb. (3.5 to 29.5 kg.), his hip flexor, from 30 to 100 lb. (13.6 to 45.4 kg.), and his bilateral abductors, from 25 to 50 lb. (11.3 to 22.7 kg.). To do trunk flexion in the beginning he had to sit at an angle only 12 degrees beyond a right angle in order to do forward bending, and this improved so that he could finally sit up from an elevation of only 15 degrees from the supine position. His trunk extensors in the beginning required 60 lb. (27.2 kg.) of counterbalance, which was reduced to only 20 lb. (9.1 kg.). At the same time with this increase in muscle power, he was able to discard his crutches. He now walks with a nearly normal gait without fatigue and is on his feet freely all day long. Since certain muscles are still showing improvement nearly four years after the onset of his disease, he is still following a moderate resistance exercise program.

Peripheral Neuritis and Nerve Injuries.—Patients with peripheral neuritis, infectious polyneuritis, and peripheral nerve injuries have been found to respond similarly to poliomyelitis patients during the phase of nerve regeneration and beginning return of muscle power. The same techniques are utilized, the rate of improvement being limited by the degree of muscle reinnervation.

Paraplegia.—Progressive resistance exercises for patients with paraplegia are directed toward development of strength of the upper extremities. The use of bar bells is familiar to all those treating these patients and need not be commented on further.

Spastic Paralysis from Upper Motor Neurone Lesions.—Resistance exercises have a limited value in developing weak muscle groups in patients with hemiplegia, multiple sclerosis, and other lesions of the central nervous system causing weakness but not complete paralysis. The stimulus of resistance exercises seems to be of some value in developing better motor patterns as well as improving strength of specific muscle groups. This is ordinarily combined with other types of exercise therapy, such as coordination, balance, and gait training.

MEDICAL CONDITIONS

Arthritis.—One of the commonest conditions met with among our aging population is degenerative joint disease involving the knees, with pain, insecure walking, and difficult stair climbing. At the present time we have no way of reversing these pathological changes, and surgical intervention is usually of value only when loose bodies are present or in removal of areas of extreme hypertrophic changes. Careful examination of these patients will almost universally reveal significant weakness of the quadriceps muscle. I believe that this weakness is an important factor in the occurrence of the symptoms, including difficulty in stair climbing and a sense of impending giving-way of the knee. We have found even in the presence of quite marked x-ray evidence of degenerative changes that the patient can exercise effectively in a nonweight-bearing position, doing knee extension, and, with progressive resistance, increase the quadriceps power to a near normal level.[7] As long as loose fragments or bony overgrowth and pain do not prevent the performance of this exercise, patients can increase strength, sometimes rather slowly, but progressively, so that great functional improvement can be achieved. The number of repetitions may have to be reduced from the usual 10 on each set to 8 or 5, and rest days may be somewhat more frequent. Except when these exercises are obviously not mechanically possible, it is recommended that they be given a trial before using surgical treatment or braces.

Patients with degenerative joint disease of the hip or malum coxae senilis have not responded as favorably to resistance exercises. In most instances, except in the very early stages, pain prevents effective maximum contractions so that satisfactory increases in muscle power are not possible. It is believed, however, that exercises of this type may be used with benefit in the after-care of many patients with "vitallium" (an alloy of cobalt, chromium, and molybdenum) mold arthroplasty. The details of technique for these patients have been described in another article.[8]

The possible utilization of progressive resistance exercises for patients with rheumatoid arthritis has been studied in view of the signal degree of muscular atrophy and weakness so commonly seen. It is evident that resistance exercises must be used with considerable caution in the presence of subacute inflammatory reactions, and not at all in the acute cases. Probably the greatest benefit is obtained in developing quadriceps strength in patients prior to ambulation and in patients with relatively inactive disease to aid in overcoming contractures. These exercises should be combined with the usual exercise programs to maintain muscle strength and joint motion of all involved areas.

---

[6] DeLorme, T. L.; Schwab, R. S., and Watkins, A. L.: Response of Quadriceps Femoris to Progressive-Resistance Exercises in Poliomyelitic Patients, J. Bone & Joint Surg. **30**-A: 834 (Oct.) 1948.

[7] Watkins, A. L.: Symposium on Recent Advances in Medicine; Physical Medicine in Treatment of Degenerative Joint Disease, M. Clin. North America **33**: 1313 (Sept.) 1949.

[8] DeLorme, T. L., and Watkins, A. L.: Progressive Resistance Exercises in Cup Arthroplasties of the Hip, Arch. Phys. Med. **30**: 367 (June) 1949.

Disuse Atrophy.—One of the most obvious applications of progressive resistance exercises is for conditioning purposes for normally innervated muscles which have become weak and atrophied due to immobilization in bed. Muscle power may easily be increased and is helpful in preparing the patient for ambulation and fuller physical activities.

Contraindications.—Certain dangers of progressive resistance exercises should be emphasized. In the presence of disease of the coronary arteries, high blood pressure, extensive arterial sclerosis, or other obstructive diseases of the arterial system, increases in intra-abdominal pressure should be avoided, such as may result from heavy resistance exercises. One would also, of course, avoid them in the presence of cardiac decompensation or known thrombophlebitis or phlebothrombosis.

SUMMARY AND CONCLUSIONS

The purpose of progressive resistance exercise is to increase muscle strength rapidly and effectively. It is based on the sound physiological principle that the most adequate stimulus for strengthening muscle is a near maximum voluntary contraction. Details of technique are important, including the use of safe and efficient equipment. Some of the most valuable applications in everyday practice have been described in traumatic, neurological, and medical conditions.

STEREOENCEPHALOTOMY

THALAMOTOMY AND RELATED PROCEDURES

Ernest A. Spiegel, M.D., Henry T. Wycis, M.D.
and
Herbert Freed, M.D., Philadelphia

The exposure of subcortical structures by the classical methods of neurosurgery usually is associated with considerable damage to the overlying cerebral tissue. Nevertheless, therapeutic procedures in the depth of the brain can be carried out with minimum injury to the cerebral hemispheres if needle electrodes are introduced by means of an apparatus that permits the exact regulation of their position, direction, and depth. The apparatus we devised, the stereoencephalotome (SET),[1] is an adaptation to the human brain of the so-called stereotaxic method used by Horsley and Clarke [2] in animal experiments. Our apparatus consists of a base and a frame (Fig. 1). The base (B) is anchored to the skull in a position parallel to Reid's base line by various plugs and auxiliary holders. On the frame (F) the needle carrier is fixed which can be moved in any plane and direction.

In order to place the lesions correctly regardless of the shape of the skull, it is necessary to refer the coordinates of the stereoencephalotome to a point within the cerebrum: the pineal body if calcified, or structures around the third ventricle or aqueduct (e. g., posterior commissure) visualized by pneumoencephalography (Fig. 2).

Preoperatively an x-ray is taken of the patient with the apparatus in situ. Its contact points with the scalp are tattooed so that exact reapplication at the operation is possible. From the x-ray films the relationship of the electrode to the reference point (pineal body, posterior commissure) is determined, and from these data and an atlas giving the distances of subcortical structures from these reference points the coordinates of the electrode tip required for a certain lesion are calculated. The electrode is inserted to the desired position through a trephine hole. The lesions are produced by electrolysis; the bare tip of the otherwise insulated needle electrode is the anode, an indifferent plate electrode the cathode.

In the last four years we have collected experiences with the application of this method in the treatment of the following conditions:

1. Mental disorders with chiefly emotional disturbances (58 cases).
2. Unbearable pain (24 cases).
3. Involuntary movements (7 cases).
4. Petit mal attacks (6 cases).
5. Subcortical tumors; preliminary studies have been carried out with Dr. M. Spiegel-Adolf in developing a method for treatment of these tumors by injection of radioactive substances.

MENTAL DISORDERS

Small circumscribed lesions were placed in thalamic nuclei, in the majority of our patients in the dorsomedial nuclei (dorsomedial thalamotomy), in some instances in the anterior nuclei (anterior thalamotomy), or in the lateral part of the posterior hypothalamus (hypothalamotomy). We attempted in this way to interfere with the circuits underlying emotions and to obtain the beneficial effects of the psychosurgical procedures on the frontal lobe (lobotomy, topectomy, transorbital leucotomy), but without some of their undesirable by-effects such as interruption of cerebral association systems.

Fifty-eight patients, mostly institutionalized for schizophrenia, depression, or severe compulsion neuroses, have been operated on. Most of these patients were

---

From the Departments of Experimental Neurology, Neurosurgery, and Psychiatry, Temple University School of Medicine and Hospital.

Read before the Section on Nervous and Mental Diseases at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

[1] Spiegel, E. A.; Wycis, H. T.; Marks, M., and Lee, A. J.: Stereotaxic Apparatus for Operations on the Human Brain, Science **106**: 349, 1947. Spiegel, E. A.; Wycis, H. T., and Freed, H.: Symposium: Psychosurgery, Thalamotomy: Neuropsychiatric Aspects, New York J. Med. **49**: 2273, 1949. Spiegel, E. A., and Wycis, H. T.: Physiological and Psychological Results of Thalamotomy, Proc. Roy. Soc. Med. **42**: 84, 1949.

[2] Horsley, V., and Clarke, R. H.: The Structure and Functions of the Cerebellum Examined by a New Method, Brain **31**: 45, 1908.

under psychiatric treatment for a period of from 1 to 17 years, and had also been subjected to the various shock therapies without relief. In four patients prefrontal or transorbital lobotomies had been performed at other institutions without alleviating the disturbances, or the patients had relapsed after initial improvement.

A total of 90 operations were performed in 58 patients, since some operations were performed in several stages, and in some patients an operation was performed again. Postoperative death occurred in two patients, so that the case mortality was 3.4%, the operative mortality 2.2%.

In patients in whom the operation was successful, beneficial effects on pathologic symptoms were obtained chiefly in the emotional sphere. The patients' anxiety, tension, and worry disappeared, or were at least definitely reduced. The patients became more easily manageable; their agitation, and aggressive or assaultive behavior subsided. Hallucinations lost their emotional charge and, occasionally, even disappeared. The same applied to paranoid ideas. Obsessive thinking also lost its force, and compulsive activity disappeared.

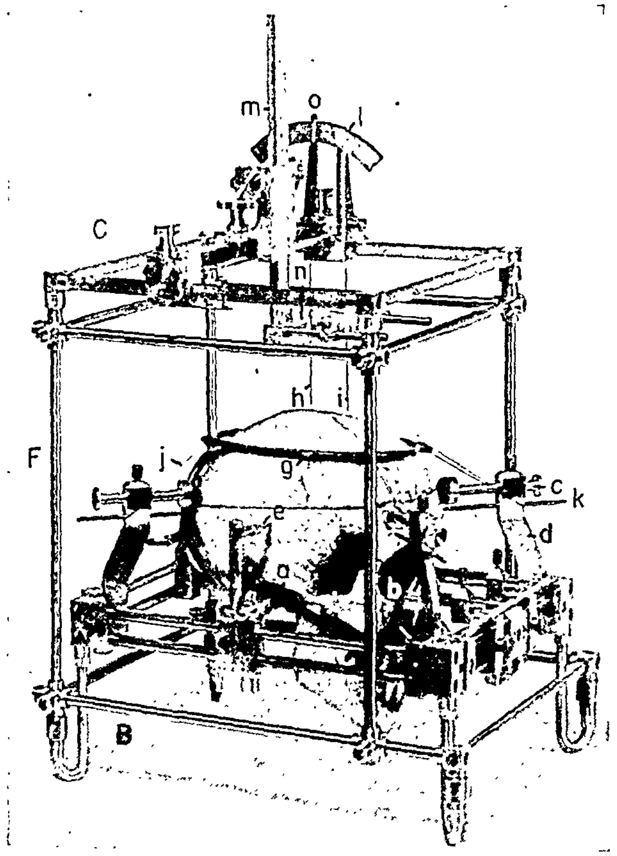


Fig. 1.—Stereoencephalotome: *B*, base; *F*, frame; *C*, electrode carrier; *a*, ear plugs; *b*, orbital bar; *c*, rubber cushioned stop; *d*, support for *c*; *e*, graduated pin; *f*, maxillary support; *g*, ring; *h*, *i*, electrodes; *j*, string (now replaced by graduated steel tape); *k*, graduated pin; *l*, protractor; *m*, upright bar of electrode holder; *n*, transverse bar of electrode holder; *o*, pointer of protractor.

Of 43 patients observed for one-half to four years after thalamotomy, 11 (25.6%) are at home with nearly full (7) or reduced (4) working capacity, and 11 (25.6%) are more easily manageable in the hospital, while 8 (18.6%) were only temporarily improved, and 13 (30.2%) were not benefited. In cases of relapse after lesion of the dorsomedial nuclei, additional lesions in the anterior nuclei and/or in the hypothalamus proved beneficial. Apparently there is a multiple representation of emotional reactions in the diencephalon.

The undesirable by-effects and sequelae of thalamotomy are distinctly less pronounced than those following operations on the frontal lobes. Memory defects, disorientation particularly for time, diminution of initiative, and slowness of response were present for some weeks after operation. In three schizophrenic patients there was a transient increase of sexuality and aggressive behavior lasting a few weeks. Undesirable effects of long duration appeared in single instances only, namely, memory defects of several months' duration and reduction of initiative. Untidiness was observed in a woman who had been subjected to frontal lobotomy preceding the thalamotomy, suggesting the possibility of a combined effect of the two operations. In none of our patients did we observe such sequelae of frontal lobotomy as facetiousness, lack of tact or discipline, distractibility, profanity, outbursts of temper, or childish behavior.

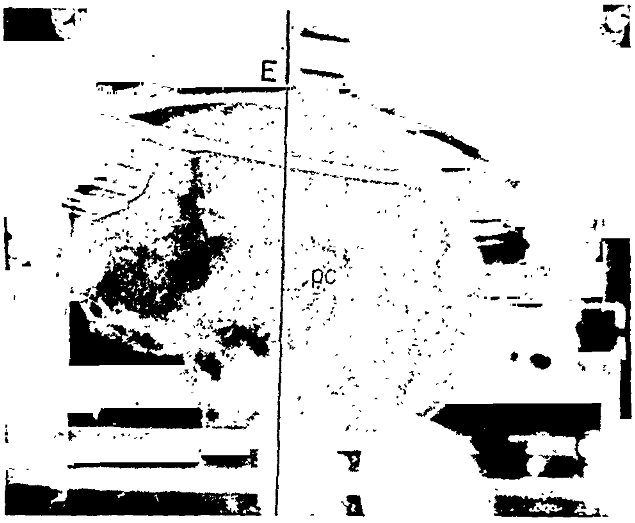


Fig. 2.—Pneumoencephalogram with stereoencephalotome in position. Electrode (E) in zero position (intersection of median sagittal and interaural planes). Distance (dotted line) of the posterior commissure (pc) from the E line is determined, as well as distance from the surface of the brain.

A statistical analysis of the results obtained with the Wechsler-Bellevue Intelligence Test failed to show significant alterations. A comparison of preoperative and postoperative Rorschach studies failed to show signs of increased organic involvement after thalamotomy.

We observed only once an epileptiform seizure that followed an orbital infection in a patient several weeks after repetition of an operation (hypothalamotomy). In none of our patients was more than a single seizure observed. Electroencephalographic studies also failed to show the development of a convulsive hyperreactivity.

For an evaluation of the various psychosurgical procedures, cases are of interest in which thalamotomy preceded or followed operations on the frontal lobe. We have two observations of the first type and four of the second: In the first group is one of our earliest patients, a woman with an obsessive-compulsive neurosis in whom, following the production of very small electrolytic lesions of the dorsomedial nuclei, there was no definite change. Two months after the thalamotomy, a psychiatrist performed a transorbital lobotomy, apparently with favorable results. However, it seems difficult to compare the effect of the two procedures, since the transorbital lobotomy was carried out before the long range effects of the thalamotomy were established. In a second patient, a severe anxiety state (borderline schizophrenia) persisted after the thalamotomy, and also after the frontal lobotomy.

In the second group (thalamotomy following frontal lobe operations) was one schizophrenic in whom prefrontal lobotomy as well as thalamotomy were ineffective.[2a] In three patients, one with obsessive-compulsive neurosis, one with severe anxiety neurosis, and one with paranoid schizophrenia, thalamotomy improved the patient's condition while the frontal lobe operations (standard or transorbital lobotomy) had failed or had only a transitory effect. This was particularly striking in the patient with severe anxiety neurosis in whom relapses had occurred despite two prefrontal lobotomies. These experiences are not only of practical but also of theoretical interest; they point to the importance of diencephalic systems in the mechanism of emotions.

UNBEARABLE PAIN

In patients with pain refractory to conservative treatment and even neurosurgical measures, we have performed various procedures: (1) interruption of the pain-conducting systems (spinothalamic, quintothalamic tracts, and adjacent systems in the reticulate substance at the level of the superior colliculi, mesencephalotomy), (2) lesion of their thalamic endings in the nucleus ventralis posterolateralis (ventrolateral thalamotomy), and (3) combination of mesencephalotomy with lesion of the dorsomedial nuclei (mesencephalothalamotomy).[3] The latter procedure was performed particularly in patients with marked emotional reaction to pain.

Our case material consists partly of patients suffering from pain due to inoperable malignancy, partly of patients in whom the pain was due to other causes, such as atypical facial neuralgia not relieved by retrogasserian rhizotomy, postherpetic neuralgia, neuroma, gastric crises, and post-traumatic and thalamic pain. In some of these patients other neurosurgical procedures such as rhizotomy, sympathectomy, and even prefrontal lobotomy had been performed in other institutions without relieving the patient.

Since the main portion of the spinothalamic systems crosses the midline, unilateral mesencephalotomy, just as unilateral chordotomy, is able to abolish or diminish pain caused by a process that is localized in the opposite half of the body. Due to the existence of an uncrossed bypath, however, it is often necessary to sever the spinothalamic tracts bilaterally in order to avoid a recurrence of the pain. Bilateral mesencephalotomy is indicated particularly when one deals with pain originating in internal organs, e. g., in visceral malignancy or gastric crises, since the homolateral conduction of pain plays a still more important role in such cases than in those in whic
pain originates in superficial structures.

In five of the seven surviving patients with pain due t
malignant tumors, mesencephalotomy at least reduce
the pain sufficiently so that the use of analgesics could b
discontinued or their dosage reduced. In two patient
sufficient relief was not obtained, apparently because th
pain-conducting pathways had not been interrupte
bilaterally.

In two patients with atypical facial neuralgia retr
gasserian rhizotomy had failed to abolish pain, whic
persisted in one patient for seven years, in the second f
10 years, preceding mesencephalothalamotomy. Th
procedure resulted in practically complete relief in bot
patients which has been maintained for three and on
half and two years, respectively.

In five patients with thalamic pain interruption of th
pain-conducting pathways in the midbrain definitel
reduced or nearly abolished the pain in two. This w
particularly dramatic in a patient with thalamic pain i
the face in whom retrogasserian rhizotomy, resection
the opposite cortical sensory face center, and homolater
prefrontal lobotomy had been tried unsuccessfully. How
ever, with the return of pain conduction apparently alo
accessory pathways, the pain reappeared after fo
months in the first patient, and after five weeks in th
second. Lesions of the nucleus ventralis posterolateral
in two other patients definitely reduced the spontaneo
pain and the dysesthesia experienced by the patient o
cutaneous stimulation before operation. This effect h
at the time of writing been maintained for four and on
half months in the one, and for four months in the oth
patient. In a third patient the operation on the nucle
ventralis posterolateralis brought relief for a few wee
only.

In a 74-year-old man suffering from postherpetic pa
in the left arm, right mesencephalotomy produced complete hemianalgesia and abolished the superficial pai
while the deep seated pain persisted. The case was complicated by drug addiction.

Just as after chordotomy, one may observe that aft
mesencephalotomy the original pain is diminished o
subsides but paresthesias appear. This was noted in
patient with an amputation neuroma and in two patient
with pain persisting after disk operations. In one of thes
patients chordotomy had been performed previously an
paresthesias had appeared after the spinal operation als
In a third patient with pain persisting after a disk operation there was a definite but transient relief from pa
following mesencephalotomy. In a patient with spin
trauma who was suffering from pain in the leg, this pa
persisted despite several disk operations, i. e., rhizotomy
sympathectomy, chordotomy, and intraspinal alcoh
injection. Mesencephalotomy produced at least a reduction of the painful area. In these two patients bilater
lesions of the dorsomedial nuclei were added; this produced in the last-mentioned patient a transient sta
of "not caring about the pain," and the other patient n
longer complained about the pain for the observatio
period of nearly one year.

[2a] Several months after thalamotomy and subsequent electroshock treatments, this patient showed definite improvement.

[3] Wycis, H. T., and Spiegel, E. A.: Symposium: Psychosurgery; [illegible] and Mesencephalothalamotomy: Neurosurgical Aspects (In- [illegible] Treatment of Pain), New York J. Med. 49: 2275, 1949.

A patient with apparent Dercum's disease (adiposis dolorosa), whose pain in the shoulder and arm persisted despite two rhizotomy operations, seemed to be relieved after an extensive mesencephalotomy; but the follow-up period has been too short to allow definite conclusions.

In a tabetic patient suffering from gastric crises that had not been relieved by bilateral prefrontal lobotomy, these attacks ceased following bilateral mesencephalotomy, which produced an analgesia of the whole body. Nine weeks later pain sensation returned in the right half of the body. This was accompanied by a reappearance of the crises, so that another operation, on the left side, will be necessary.

Morbidity and Mortality.—Regarding the by-effects of the operation, one has to remember that at the level of the superior colliculi the spinothalamic tract lies close to the auditory pathways. Since the puncture is made from the dorsal aspect, there is a better chance to avoid injury to the auditory system that lies lateral to the spinothalamic tract than if one makes an incision through the lateral surface of the midbrain as in Walker's [4] mesencephalic tractotomy. However, in single instances the lesion may encroach on the cochlear tract and there may be a constriction of the hearing field and transitory subjective auditory sensation such as buzzing in the opposite ear. The oculomotor nuclei and roots fortunately are sufficiently distant from the spinothalamic tract so that they are only occasionally partly affected.

Bilateral puncture may encroach on the center for upward gaze in the gray matter around the aqueduct or its cortical connections so that upward movement of the eyeballs may be impaired. This disturbance, however, rarely produces a significant inconvenience. In one patient we observed intentional tremor due to encroachment on the nucleus ruber-brachium conjunctivum system. This existed for a few weeks only.

Two patients with carcinoma died within a week after operation. These patients were poor operative risks due to their advanced cachectic state. In one hypertensive patient with a thalamic syndrome the blood pressure rose during the operation to 240 and apparently an intracerebral hemorrhage occurred. The patient died five weeks postoperatively, from bronchopneumonia. Thus the case mortality for this group of 24 patients is 12.5%, the operative mortality (39 operations) 7.7%.

An important point to be considered is the problem of remaining or recurrent pain which is due to the existence of various bypaths (chains of short neurons in the reticulate substance). The question arises how to treat the pain due to this remaining conduction outside the spinothalamic system. Cutting of the frontothalamic connections in prefrontal lobotomy eliminates the emotional component and the anxiety associated with pain (Freeman and Watts). We were able to influence emotional disturbances by thalamotomy, avoiding most of the undesirable by-effects of the frontal lobe operations. We combined, therefore, in some cases mesencephalotomy with thalamotomy (so-called mesencephalothalamotomy) in order to diminish the emotional reactivity of the patient to pain impulses that still may reach the higher centers by way of the above-mentioned bypaths. A comparison of two patients may help to throw some light on this problem. In the above-mentioned patient, suffering from pain in the leg following spinal trauma, the pain apparently was not accompanied by a definite emotional component. Thalamotomy produced only a transitory inattention to pain, and within a few weeks the patient's complaints returned. In another patient suffering from atypical facial neuralgia persisting despite retrogasserian rhizotomy there was a definite emotional factor. Contralateral mesencephalothalamotomy produced a transitory hemianalgesia. Despite the regression of this hemianalgesia, the pain of the patient did not return except for occasional paresthesias. Apparently thalamotomy combined with mesencephalotomy had diminished the patient's emotional reactivity to remaining pain impulses to such a degree that she could be considered practically cured. Whether mesencephalotomy should be performed alone, or whether it should be combined with thalamotomy, apparently depends on the degree of associated emotional reactions.

CONVULSIVE DISORDERS OF SUBCORTICAL ORIGIN

The stereotaxic method permits one to approach the question whether certain types of convulsive disorders such as petit mal seizures may have a subcortical component. In patients suffering from grand and petit mal attacks or petit mal only, the electrical discharges from the thalamus (electrothalamogram or ETHG) were recorded during operation by means of needle electrodes introduced by the stereoencephalotome. We observed three types of reaction:

1. The discharges appeared simultaneously in the cortex and in the diencephalon.
2. The discharges (spikes or spikes and slow waves) remained limited to the thalamic leads, while the electrocorticogram recorded by scalp electrodes failed to show abnormal potentials.
3. The seizure discharges first appeared in the thalamus, then these abnormal thalamic discharges were accompanied by similar ones in the frontal leads, and finally the thalamic seizure discharges outlasted those in the frontal lobe.

A fourth type, spread of a cortical discharge to the thalamus, was observed by Meyers and others [5] in a study including other types of convulsive disorders.

The seizure discharges are not limited to the region of the internal lamina medullaris on stimulation of which Jasper [6] was able to elicit spike-and-dome patterns in the electroencephalogram, but they may have the maximum amplitude in distant parts such as the more dorsal areas of the thalamus or the hypothalamus.

We placed lesions in the areas of abnormal thalamic discharges in patients suffering from petit mal or from grand and petit mal attacks with predominance of the latter type of seizures in the hope of influencing this latter component. Our experiences with the latter operation (six patients refractory to the usual medication) are too small to warrant definite conclusions regarding the effectiveness of this procedure. We did not succeed as yet in abolishing the petit mal seizures completely; however, at least in two of five patients observed for a period of from one to three years, there was a definite reduction in the number of petit mal attacks (in one patient from a monthly average of 20 to 6; in a second from a monthly average of 150 to 1). In the last-mentioned patient there was also a diminution of the severity of the associated motor phenomena (such as facial twitching, shaking of the head) and of the disturbance of consciousness. In a sixth patient the observation period was too short to permit a statement, although the duration of the single attacks apparently had diminished. Our experiences seem to justify the conclusion that, at least in a certain group of patients with petit mal, a subcortical component plays a part; however, relatively large areas of the thalamus seem to be affected so that lesions of relatively large parts of this ganglion would be necessary in order to abolish petit mal seizures completely.

---

[4] Walker, A. E.: Relief of Pain by Mesencephalic Tractotomy, Arch. Neurol. & Psychiat. **48**: 865, 1942.

[5] Meyers, R.; Knott, J. R.; Hayne, R. A., and Sweeney, D. B.: The Surgery of Epilepsy: Limitations of the Concept of Cortico-Electrographic "Spike" as Index of Epileptogenic Focus, J. Neurosurg. **7**: 337, 1950.

[6] Jasper, H. H., and Droogleever-Fortuyn, J.: Experimental Studies on the Functional Anatomy of Petit Mal Epilepsy, A. Res. Nerv. & Ment. Dis., Proc. **26**: 272, 1947.

INVOLUNTARY MOVEMENTS IN CHOREA AND ATHETOSIS

Two new approaches have been devised for the surgical treatment of involuntary movements: lesions of the dorsomedial nuclei of the thalamus (thalamotomy), and lesions of the globus pallidus (pallidotomy).

Thalamic Lesions.—It is well known that afferent stimuli, and particularly emotions, are able to accentuate these involuntary movements. Since we had observed that lesions of the dorsomedial nuclei were able to diminish emotional reactivity, and since Papez[7] described fibers originating in the dorsomedial nucleus and projecting to the globus pallidus, it seemed worthwhile to ascertain whether lesions of the dorsomedial nuclei would diminish choreic and athetotic movements. Electrolytic lesions of the dorsomedial nuclei significantly reduced the involuntary movements in but one of four patients, a 53-year-old man who suffered from jerky choreiform movements involving the entire musculature bilaterally. Since an older sister had twitching of the shoulders, Huntington's chorea was diagnosed. Large electrolytic lesions of the left dorsomedial nucleus diminished the hyperkinesis on the right side particularly of the right hand. A similar lesion of the right dorsomedial nucleus reduced the hyperkinesis of the left side, again chiefly in the hand. The movements of the head were not influenced. The reduction of involuntary movements was sustained for a little over a year.

In two additional patients with Huntington's chorea, lesions of the dorsomedial nuclei were ineffective, perhaps due to the lack of emotional factors. In a boy suffering from cerebral palsy and athetosis following birth trauma, the reduction of the involuntary movements on the side opposite the thalamic lesion lasted only a few days.

Pallidal Lesions.—Numerous pathological experiences indicate that lesions of the globus pallidus or of the substantia nigra, ganglia where extrapyramidal motor fibers originate, are associated with hypokinesis, at least in the great majority of the patients. Thus it may be expected that production of small lesions in these ganglia ma counteract some types of hyperkinesis.

We attempted to produce a lesion of the right sul stantia nigra in a single patient only. This was a 71-yea old patient with cerebral arteriosclerosis and arteri sclerotic heart disease in whom hemiballism had deve oped in the left arm following a cerebrovascular acciden After operation the involuntary movements did n return. Unfortunately, bronchopneumonia and renal fai ure developed postoperatively and the patient died fi weeks after operation. The autopsy revealed a circun scribed electrolytic lesion in the medial part of the rig substantia nigra besides old softenings in the region the corpus subthalamicum and the lateral nucleus. L sions of the globus pallidus (pallidotomy) were pr duced in five patients.

The pallidum can be reached by an oblique punctu through the frontal lobe sparing the corticifugal syste to the cranial nerves and the pyramidal tract. Since inje tion of 1 drop of 50% alcohol into this ganglion prov insufficient, we eventually produced electrolytic lesio of the pallidum. Small lesions in its most anterior pa were ineffective. Large lesions including the medial pa of the pallidum are dangerous because they may e croach on the pyramidal tract. This was shown in one p tient in whom a hemiplegia developed after an extensi pallidal lesion. In four patients (three with Huntington chorea, one with electric chorea) we tried, therefore, t spare the most medial part of the pallidum, and place the lesions in the lateral segment of the pallidum onl In the patient with electric chorea a unilateral pallid lesion did not diminish the lightning-like jerking th affected the whole body. In two of the three patients wi Huntington's chorea bilateral lesions of the pallidur usually produced first on the right and later on the le side, were able to reduce or nearly abolish the involu tary movements, particularly in the extremities. In t third patient a reduction of the choreatic movements wa obtained on the right side only. An abstract case report the patient who has been observed for the longest peric follows.

A 63-year-old Negro suffered for two and a half years fro involuntary bizarre generalized movements that became pr gressively worse. Three brothers had a similar condition. The was an inconstant bilateral Hoffman's sign. Blood and spin fluid Wassermann were +4. Large electrolytic lesions the left dorsomedial nucleus and a small lesion of the anteri tip of the right pallidum failed to influence the involuntary mov ments. After extensive electrolytic lesions produced in the later part of the right pallidum (second operation) the involunta movements ceased on the left side. A slight left-sided hemipares developed affecting particularly the left leg. Two weeks after o eration there was a definite return of power of the voluntar movements. The choreiform movements did not reappear e cept for some twitching in the left frontalis muscle. Similar ele trolytic lesions in the external part of the left pallidum (thir operation) abolished the choreiform movements on the right sid except for slight movements of the toes. Transitory slight weakness developed in the extremities of the right side, without Babinski's sign. Three months after a left pallidotomy and fiv months after a right pallidotomy the patient showed only on th left side a weakness of the extremities with increase of the dee reflexes and a Hoffman's sign. On the right side voluntary movements could be performed rather well and with normal powe The only sign of an injury to the pyramidal tract on the righ side was a positive Hoffman's sign. However, this sign had bee positive bilaterally before operation. The only involuntary movements noticeable were a slight jerking of the shoulders, extensor-flexor movements of the thumb, and extensor movements of the toes on the right side. Muscular rigidity did not develop, probably because circumscribed lesions had been produced, leaving parts of the pallidum intact. Seventeen months following the second operation the patient's improvement has been sustained. The only residual is a mild weakness of the left lower limb. The choreatic movements have not returned despite the known progressive character of the disease.

---

[7] Papez, J. W.: Fiber Connections of the Basal Ganglia, A. Res. Nerv. & Ment. Dis., Proc. 21:21, 1942.

Thus lesions of the pallidum are able to eliminate nearly completely violent choreatic movements of Huntington's chorea on the side opposite the operation. The question arises as to whether the cessation of the involuntary movements is due to the pallidal lesion or to unintended by-effects on corticifugal fibers of the internal capsule injured directly by the electrolysis or indirectly by thrombosis of vessels passing through the pallidum. In this respect the effect of the left-sided pallidotomy in the last cited case is of interest. Signs of pyramidal injury subsided within a short time. At a stage when voluntary motility of the right side was nearly normal, the choreic movements were still absent except for slight jerking limited to the shoulder, the thumb, and the toes of the right side. It seems, therefore, justified to relate the cessation of involuntary movements chiefly to the pallidal lesion.

These experiences seem to support, at least for a large group of chorea patients, those theories which attribute to the pallidum an essential role in the efferent innervation of the involuntary movements. However, it should be emphasized that some types of chorea, such as electric chorea, apparently are not benefited by pallidal lesions. It seems hardly necessary to mention that the mental changes in patients with Huntington's chorea, which are due to cortical impairment, are not influenced by pallidotomy. We only wish to infer from this series that in a group of choreas such as Huntington's chorea circumscribed pallidal lesions are able to reduce or to nearly abolish the involuntary movements while the voluntary innervation remains preserved.

3400 N. Broad St. (Dr. Spiegel).

CONTROL OF BONE LENGTH

Walter P. Blount, M.D.
and
Frank Zeier, M.D., Milwaukee

Inequalities of bone length are an important cause of deformity of the human body. Shortness of an arm can be disguised satisfactorily by the clothing and is of little significance. A discrepancy in leg length produces a definite disability. Until the advent of anesthesia this deformity could be successfully treated only by the use of a high shoe or some prosthetic appliance. Although some of these gadgets were ingenious, they were always unsightly.

Rizzoli[1] of Bologna was probably the first to equalize leg length deliberately. In 1845 he permitted the fragments of a fractured femur to override 3 in. so that the length was equal to that of the other femur, which had been short for 20 years because of a fracture. Impressed by the ease of this procedure, two years later he produced a fracture of the femur with an osteoclast which he devised. By permitting overriding of the fragments in this 9-year-old girl and then applying a stiff dressing, he equalized shortening which had been produced on the opposite side by a fracture during infancy. He used the method again successfully on a 16-year-old girl with an unreduced traumatic dislocation of the hip.

Rizzoli's successor, Codivilla, shortened a femur by open operation; more important, he lengthened a short tibia. Any operation to shorten the one sound leg has always been open to objection, and even before Codivilla there had been attempts to lengthen the short leg. Overriding, partially united fractures were rebroken and pulled down with skin traction. But sloughing of the soft tissues of the heel and dorsum of the foot was the rule, and the method was considered impractical until Codivilla pulled directly on a pin in the calcaneus. He had an ingenious extension device with slotted bars and wing nuts at the end of a plaster cast. When he reported the method in this country in 1904,[2] he emphasized the fact that the soft parts, and particularly the blood vessels and nerves, could not be lengthened as readily as the bone.

In 1913 Magnuson[3] published a paper on experimental one-stage lengthening of the femur with a step-cut osteotomy. A 32-lb. (14.5 kg.) pull was sufficient to get ¼ to ½ in. (0.6 to 1.3 cm.) lengthening of a dog's femur. Length was maintained by immediate fixation with ivory screws. In another paper Magnuson[4] reported 14 cases of femoral lengthening by his method, with temporary toe drop in 3 cases and death from shock in 1. Bone lengthening did not become popular.

From the Milwaukee Children's Hospital.

This paper is a revision of Dr. Blount's chairman's address read in the Section on Orthopedic Surgery at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

[1] Rizzoli, F., and Taruffi, C.: Accavallamento dei frammenti d'una recente frattura del femore destro, procurato dal Prof. Rizzoli, onde togliere il difetto del zoppicare rimasto in sequito di antica frattura del femore sinistro, Bull. d. Sc. Med. di Bologna **9**: 39, 1846. Rizzoli, F.: Das Uebereinanderschieben der Fragmente einer züfalligen oder absichtlichen Fraktur des Femur zur Behebung des Hinkens, welches durch unverbesserliche Verkürzung des entgegengesetzten Beines bedingt wird, Wien. med. Wchnschr. **19**: 1238, 1869. Rizzoli, F.: Frattura artificiale acclavallata del femore destro per togliere una claudicatione a sinistra (Session of Nov. 9, 1871), Memorie della Accademia della Scienze dell' Instituto di Bologna **3**: Serie 1, 1871.

[2] Codivilla, A.: On the Means of Lengthening in the Lower Limbs, the Muscles and Tissues Which Are Shortened Through Deformity, Am. J. Orthop. Surg. **2**: 353, 1905.

[3] Magnuson, P. B.: Lengthening Shortened Bones of the Leg by Operation, Ivory Screws with Removable Heads as a Means of Holding the Two Bone Fragments, Surg., Gynec. & Obst. **17**: 63, 1913.

[4] Magnuson, P. B.: Lengthening Shortened Bones of the Leg by Operation, Ivory Screws with Removable Heads as a Means of Holding the Two Bone Fragments, Pennsylvania Univ. M. Bull. **21**: 103, 1913.

[5] Taylor, R. T.: Shortening Long Legs and Lengthening Short Legs; a New Surgical Procedure, Am. J. Orthop. Surg. **14**: 598, 1916.

At the same time R. T. Taylor[6] and A. R. Shands[6] observed that shortening the long leg was easier than lengthening the short one. Calvé[7] published his somewhat complicated methods of femur shortening in 1918. He achieved as much as 4-cm. shortening and maintained the position by dovetail or tongue-and-groove approximation of the ends of the femur.

There were very few attempts at bone lengthening during this period. Improvements in the technic were published by Codivilla's successor, Putti, in 1921[8] and by Abbott in 1927[9] and 1928.[10] In 1936 Abbott and Saunders[11] offered a refined technic of leg lengthening. Meticulous but extensive dissection was carried out preliminary to four pin traction and distraction. Although Abbott warned in detail of the complications which might ensue, his splendid paper stimulated many to attempt leg lengthening.[11] There were some disasters, including nonunion, increased paralysis, deformity, and even loss of the leg. In general, bone lengthening was a hazardous procedure,[12] painful to both the patient and the surgeon. There are occasional relative indications. Intramedullary fixation facilitates the procedure but does not materially reduce the hazard.[13]

Leg shortening was a more direct approach to the problem and again the pendulum swung toward this procedure. It was associated with fewer complications, but the operation was still one of considerable magnitude. The technic was simplified by J. Warren White[14] in 1935. After a transverse osteotomy overriding was maintained by two pins incorporated in plaster, which were withdrawn after eight weeks.

Ollier[15] is generally recognized as the first to arrest growth. He destroyed or resected what was left of the distal epiphyseal plate of the tibia and excised one or both epiphyseal cartilages of the fibula in the correction of varus deformity at the ankle. In 1932 Phemister[16] reported the arrest of longitudinal growth of bone by a new method. He curetted and grafted one epiphyseal plate of a long bone at the time indicated by a composite growth chart. The operation was of less magnitude, and it did not carry as much risk of complication as the previous ones. Failure to stop growth on one side of the bone occasionally caused angular deformity. Mistakes in estimating the future growth resulted in inadequate or excessive correction.

A successful epiphyseal arrest operation requires an accurate prediction of the future growth of the patient's bones. Baldwin,[17] Hatcher,[18] Gill and Abbott,[19] Green and Anderson,[20] and other investigators have contributed growth studies and have compiled growth tables and graphs. Even if one allows for familial tendencies, habitus, and bone age, these are only approximations. They must rely on actuarial computations based on averages. Most surgeons are happy if they come within 1 in. of the desired result. However, these growth studies are the basis for the prognosis in any growth control operation. Their principles must be understood before any of the procedures mentioned in this paper is undertaken.

Roentgen radiation of the epiphyses has produced retardation of growth somewhat proportional to the amount of radiation. Barr[21] and his associates found that large doses completely stopped growth of the tibial epiphyses of albino rats; moderate doses retarded it. They and others[22] tried roentgen radiation on the epiphyses of children. The method was discarded because the results were not dependable, and there was the hazard of soft tissue damage.

STIMULATION OF GROWTH

The acceleration of growth by sympathectomy has been advocated by Harris.[23] The increment obtained after this operation is usually too small to be of practical importance unless there is some clinical evidence of associated vasomotor disturbance. Recently in Sweden an arteriovenous aneurysm has been created surgically in order to stimulate the growth of a short leg.[24] Acceleration has been produced, but the probable cardiac changes make the method hazardous. The end results are not yet available.

Post-traumatic acceleration of growth is well recognized, but the results are not predictable. After a fracture of the femur in a child between 6 and 10 years of age, the average overgrowth is 1 cm. Sometimes the bone remains the same length. Sometimes the relative length is increased as much as 2 or 3 cm. The result is apparently independent of the type of the fracture or its relationship to the epiphysis.[25] The surest way to obtain increased length is to manipulate the bone after four or five weeks, so as to stimulate the formation of exuberant callus. In practice, if osteotomy or osteoclasis is indicated because of bowing or some other deformity, the operation may be counted on for some temporary acceleration

---

6. Shands, A. R.: Shortening of the Long Leg, Internat. J. Surg. **30:** , 1917.

. Calvé, J., and Galland, M.: A New Procedure for Compensatory ortening of the Unaffected Femur in Cases of Considerable Symmetry of the Lower Limbs, Am. J. Orthop. Surg. **16:** 211, 1918.

8. Putti, V.: The Operative Lengthening of the Femur, J. A. M. A. **77:** 934 (Sept. 17) 1921.

9. Abbott, L. C.: The Operative Lengthening of Tibia and Fibula, J. Bone & Joint Surg. **9:** 128, 1927.

10. Abbott, L. C., and Crego, C. H.: Operative Lengthening of Femur, South. M. J. **21:** 823, 1928.

11. Abbott, L. C., and Saunders, D. M.: The Operative Lengthening of the Tibia and Fibula, Ann. Surg. **110:** 961, 1936.

12. Brockway; A.: Clinical Résumé of Forty-Six Leg Lengthening Operations, J. Bone & Joint Surg. **17:** 969, 1935.

13. Bost, F. C.: Personal communication to the authors.

14. White, J. W.: Femoral Shortening for Equalization of Leg Length, J. Bone & Joint Surg. **17:** 597, 1935.

15. Ollier, L.: Traité des résections et des opérations conservatrices qu'on peut pratiquer sur le système osseux, V. Masson, Paris, 1888, vol. 2, p. 473.

16. Phemister, D. B.: Operative Arrestment of Longitudinal Growth of Bones in Treatment of Deformities, J. Bone & Joint Surg. **15:** 1, 1933.

17. Baldwin, B. T.: The Physical Growth of Children from Birth to Maturity, Univ. of Iowa, cited by Campbell: Studies in Child Welfare **1:** no. 1, 1921.

18. Hatcher, C. H.: Operative Orthopaedics, St. Louis, Mosby, 1939, ed. 1, p. 953.

19. Gill, G., and Abbott, L. C.: Practical Method of Predicting the Growth of the Femur and Tibia in the Child, Arch. Surg. **45:** 286, 1940.

20. Green, W. T., and Anderson, M.: Experiences with Epiphyseal Arrest in Correcting Discrepancies in Length of the Lower Extremities in Infantile Paralysis, J. Bone & Joint Surg. **29:** 659, 1947.

21. Barr, J. S.; Lingley, J. R., and Gall, E. A.: Effect of Roentgen Irradiation on Epiphyseal Growth; Experimental Studies upon Albino Rat, Am. J. Roentgenol. **49:** 104, 1943.

22. Judy, W. S.: Attempt to Correct Asymmetry in Leg Length by Roentgen Irradiation; Preliminary Report, Am. J. Roentgenol. **46:** 237, 1941.

23. Harris, R. I.: Effect of Lumbar Sympathectomy on Growth of Legs Shortened from Anterior Poliomyelitis; Preliminary Report, J. Bone & Joint Surg. **12:** 859, 1930.

24. Friberg, S.: Personal communication to the authors.

25. Blount, W. P.; Schaefer, A. A., and Fox, G. W.: Fractures of Femur in Children, South. M. J. **37:** 481, 1944.

of growth. Pease [26] has called attention to the fact mentioned by von Langenbeck,[27] but often overlooked, that the growth of the tibia distal to a fractured femur is sometimes more rapid.

If overgrowth of a bone is due to a fracture or other local injury, the acceleration will persist only while the stimulating factor operates, and then growth will continue at a normal rate. The increase in length is usually *permanent*. It is physiological—not "compensatory." There is no "equalizing force" within the body which will retard growth later. It is true that the epiphyseal plate which has been stimulated by disease, fracture, or operation will usually close a few months prematurely. This may reduce the relative length of an overgrown bone. However, in the few months that the epiphysis of the opposite leg remains open after one has closed prematurely, there is usually very little growth on the opposite side.

Juxtaepiphyseal curetting and other bone operations occasionally produce significant acceleration of growth,[28] but the results vary greatly. Many men have attempted to stimulate the growth of bone in small animals.[29] Implanting all manner of foreign bodies and noxious material at the metaphyses produced enough reaction in some cases to injure the epiphyseal plate and retard growth. In only a very few cases was any stimulation produced.[30] But small animal experimentation is futile in the evaluation of stimulation in humans. In 1869 von Langenbeck [27] increased the rate of growth of the left femur and tibia of a puppy with ivory pegs. Ollier [15] obtained the same effect in the tibia of a child with lead nails in 1889. Pease [26] implanted metal and ivory screws at the metaphyses and produced considerable acceleration of the growth of both tibia and femur. He recommends the implantation of ivory blocks. We have recently found this effective.

While looking for a method of stimulating growth, Haas discovered that the elongation of a bone could be retarded by encircling the epiphyseal plate with a wire loop. This proved feasible in both laboratory animals and in children. Growth was held back mechanically. When the wire loop broke or was removed, growth was resumed at about the normal rate. The implications were tremendous. Haas had discovered the principle of temporary arrest of epiphyseal growth.[31]

We have used *staples* to control epiphyseal growth in children since 1944 with great satisfaction.[32] Complications have been few and easily remedied. Growth has been stopped almost completely with the use of three staples on either side of the epiphyseal plate. Angular deformity in a long extremity has been corrected by asymmetrical stapling.[33]

When Haas [34] stapled small animals, using ordinary carpenter's staples, his results were not consistent. He has since inserted crossed pins at the site of the epiphyseal plate and produced shortening.[35] Gelbke [36] has duplicated many of our findings by circling the epiphyses of puppies with wire loops.

Epiphyseal stapling is actually not new. Dr. Frank Walsh [37] recently called our attention to a case report by Arbuthnot Lane. In his first book published in 1905 [38] there is an illustration of a fracture through the distal femoral epiphysis of a boy of 15. An open reduction was performed, and the fragments were held in position by three staples on the medial side of the bone. In the first edition Lane reports a perfect result. For the second edition in 1914 [39] he investigated further and reported:

> I introduced several staples . . . on the understanding that I was to be permitted to remove them when union had taken place. When the boy got well the parents refused to allow of their removal. When I saw him a year later he had developed a bowing of the leg, due to cessation of growth in the inner segment of the growing line.
>
> The surgeon should not control a growing line by a plate or other means. If he is obliged to do so in order to retain the fragments in position, he should remove the control when union has taken place. As I pointed out, the rate of growth in the several portions of a growing line varied inversely as the pressure transmitted, and a neglect to remove the controlling apparatus results in a cessation of growth over the area of the growing line that is affected.

Unfortunately, Lane did not carry the thinking further and suggest the use of staples to arrest growth therapeutically.

Since the publication of a preliminary report two years ago,[33] we have continued to use the method without significant change, with a total of 117 operations on 90 patients, not including the removal of staples. The ages varied from 5 to 15 years with an average age of 10⅕ years. Four patients were under the preferred lower age limit of 8 years. One was 5 years, one 6 years, and two were 7 years of age. The result in one of these patients was entirely satisfactory. There were complications in three patients. In a boy of 7 years one staple gradually pulled out, and one cut through the epiphyseal plate. The staples were replaced without ill effect. In a boy of 6 years staples were placed in the tibia with difficulty. One staple pulled out and another broke. All staples were reinserted, and the result was good. In a girl, 5 years, one of the two medial staples was in the bone only at the proximal end, and the other pulled out, causing a

---

26. Pease, C. N.: Local Stimulation of Growth of Long Bones, read at the American Academy of Orthopaedic Surgeons Meeting, Jan. 30, 1951.

27. von Langenbeck, B.: Ueber krankhaftes Längenwachsthum der Röhrenknochen und seine Verwerthung fur die chirurgische Praxis, Berl. klin. Wchnschr. **6**: 265, 1869.

28. Ferguson, A. B.: Surgical Stimulation of Bone Growth by a New Procedure, J. A. M. A. **100**: 26 (Jan. 7) 1933.

29. Bohlman, H. R.: Experiments with Foreign Materials in the Region of the Epiphyseal Cartilage Plate of Growing Bones to Increase Their Longitudinal Growth, J. Bone & Joint Surg. **11**: 365, 1929.

30. Wu, Y. K., and Miltner, L. J.: Procedure for Stimulation of Longitudinal Growth of Bone, J. Bone & Joint Surg. **19**: 909, 1937.

31. Haas, S. L.: Retardation of Bone Growth by a Wire Loop, J. Bone & Joint Surg. **27**: 25, 1945.

32. Hodgen, J. T., and Frantz, C. H.: Arrest of Growth of the Epiphyses, Arch. Surg. **53**: 664, 1946.

33. Blount, W. P., and Clark, G. R.: Control of Bone Growth by Epiphyseal Stapling; Preliminary Report, J. Bone & Joint Surg. **31-A**: 464, 1949.

34. Haas, S. L.: Mechanical Retardation of Bone Growth, *J. Bone & Joint Surg.* **30-A**: 506, 1948.

35. Haas, S. L.: Restriction of Bone Growth by Pins Through Epiphyseal Cartilaginous Plate, J. Bone & Joint Surg. **32-A**: 338, 1950.

36. Gelbke, H.: Tierexperimentelle Untersuchungen zur Frage des epiphysären Längenwachtstum des Knochens unter Druck, Longenbecks Archiv für Klinische Chirurgie **265**: 133, 1950.

37. Walsh, F.: Personal communication to the authors.

38. Lane, A.: The Operative Treatment of Fractures, London, The Medical Publishing Company, 1905, ed. 1, p. 95.

39. Lane, A.: The Operative Treatment of Fractures, London, The Medical Publishing Company, 1914, ed. 2, p. 133.

knock knee (Fig. 2). A year and one-half after insertion the medial staples were replaced and the lateral withdrawn (Fig. 3). When the knock knee was corrected, all of the staples were removed. Markers were implanted. Growth has continued at a normal rate (Fig. 4).

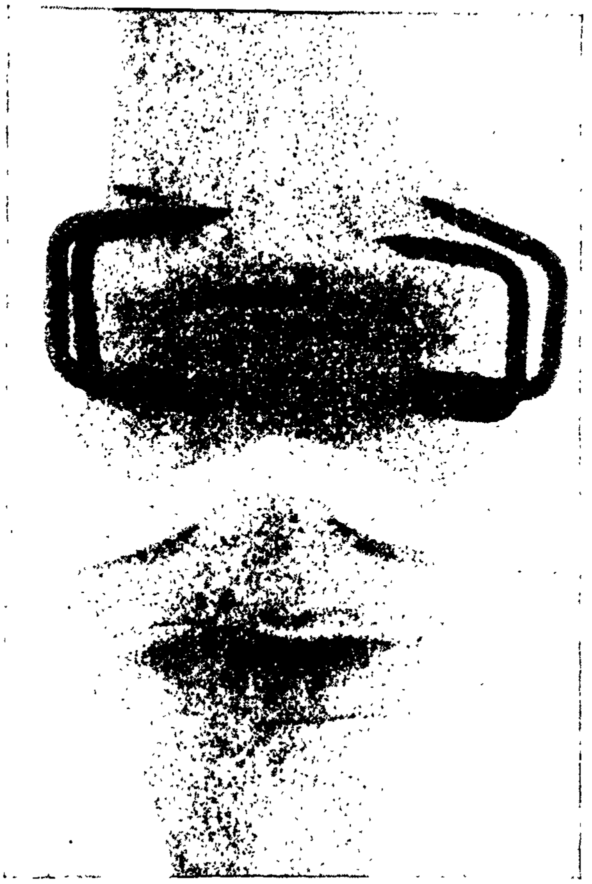


Fig. 1.—Right lower femur of J. D., 6 years 1 month (too young), on t. 27, 1946, 10 months after stapling for a short left femur. Three ples on each side would have been better. Note that on the lateral side c staples are bending equally. On the medial side one staple is bending excessively, the other not at all. Rule: A single staple is improperly placed if it does not bend while others do (see Fig. 2).

In our first paper it was established: 1. Efficient stapling of the distal femoral or proximal tibial epiphysis stops elongation of the bone at this epiphysis almost completely. 2. Angular deformity may be corrected during the growth period by asymmetrical placement of the staples. 3. After removal of the staples, growth at the epiphysis is resumed at about the same rate as would be expected on the other side, if it were normal.

Several important problems remained for future study: 1. What is the ideal material, size, and design for staples? 2. At what ages and for what length of time is it safe to leave staples in the bone with assurance of renewed growth on removal? 3. What facts can be established about the rate of growth after removal of staples? 4. What are the factors influencing epiphyseal closure? The facts which were established in the first paper have been verified by subsequent experience. The four open questions have been studied further, and some of them can be answered.

SPECIFICATIONS FOR STAPLES

Experience has proved that staples in two sizes made from 3/32 in. (0.2 cm.) stainless steel rods as originally described [33] are adequate for most situations. Three are used as a unit on either side of an epiphysis, sometimes in older children four. In early cases, when only two were placed on a side, they bent too much. A single staple on each side broke if growth was slow. During a growth spurt a single staple would pull out or cut through the epiphyseal plate and remain in the metaphysis without ill effect. Occasionally the fibular epiphysis should be stapled instead of curetted. To obtain a staple with shorter legs, one of the small size is driven part way, pulled out, and the ends cut off before the staple is redriven.

Staples have been made by a large number of instrument companies and persons. Some of the stainless steel has not been inert. Dr. Charles Frantz [40] reported to me 12 cases in which there was a local reaction about the staples with rarefaction of bone suggesting localized osteomyelitis. In two of these there were pain, swelling, and local heat. On removal of the staples the reaction subsided in all cases. Cultures were negative. There was found to be marked pitting and erosion of the staples due to electrolysis (Fig. 5).

Some of the stainless steel was softer than the specified Rockwell of 33 to 35 C. These staples have bent excessively with the force of growth, often enough to extrude. Slight bending is normal for any group of staples and may be desirable. It takes only 25 lb. (11.3 kg.) of pull to bend the points apart ⅛ in. (0.3 cm.) if it is localized ¼ in. (0.6 cm.) from the points of a staple. Failure of a staple to bend a little usually means that it is improperly placed (Fig. 2). Bending is less marked with steady growth than with spurts of rapid growth. After removal

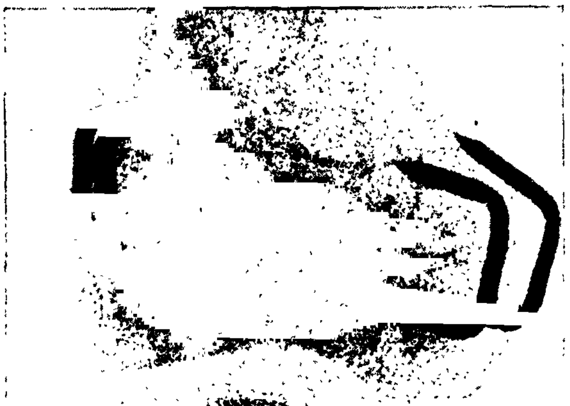


Fig. 2.—Right lower femur of J. D. on May 3, 1947, eight months later than in Figure 1 and 18 months following stapling. From a growth line it was evident that the distal femoral epiphysis had grown 7 mm. on the medial side and only 1 mm. on the lateral, causing a knock knee. The lateral staples had held; one medial staple had pulled out. The second medial staple did not bend at all, so it was not securely in the bone. On removal it was found that the proximal end was in soft tissue.

---

[40] Frantz, C.: Personal communication to the authors.

staples should not be bent back into shape and used again because bending increases the likelihood of breaking.

Various modifications of staples have been tried by us and by others who have used the method. We have settled on the ones described in the original article,[33] but with spear points instead of beveled ends. The way the staple is made is of less importance than the accuracy of placement. There is less chance of error when multiple staples are used.

Bends and notches for identification are superfluous. Roughening or barbing the staples has been tried by some to make them hold more securely. It is unnecessary if the child is of proper age. Unless the staples spread excessively, smooth ones will not extrude. Notching makes removal very difficult. The threat to the integrity of the growing epiphyseal plate is the removal, not the insertion, of the staples.

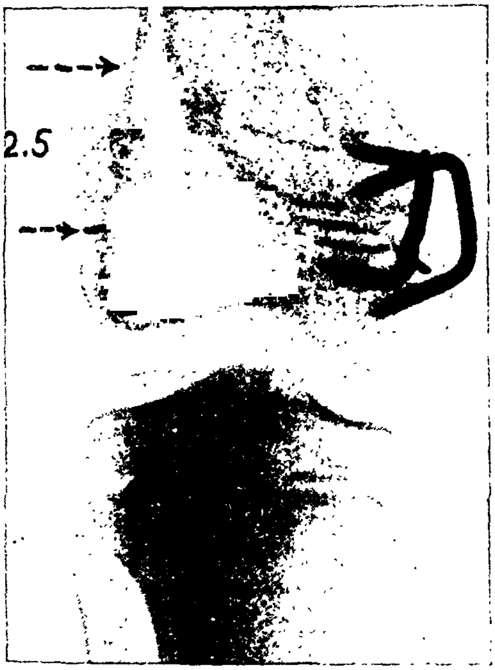


Fig. 3.—Right lower femur of J. D. on June 20, 1947, six weeks later than in Figure 2. X-ray was taken in the operating room on the day that the lateral staples were revised. The anterior of the medial staples was removed and replaced. Note the distortion of the femoral epiphyseal plate and the position of the markers. These figures show mistakes in the insertion of staples as well as correction of deformity arising from these errors. Eight months later, on Feb. 6, 1948, the knock knee was completely corrected, and the medial two staples were removed.

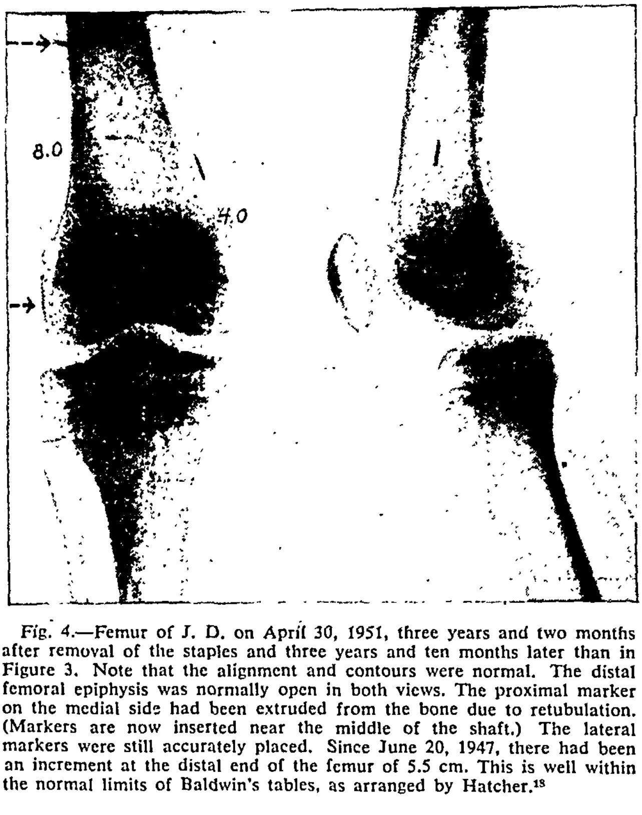


Fig. 4.—Femur of J. D. on April 30, 1951, three years and two months after removal of the staples and three years and ten months later than in Figure 3. Note that the alignment and contours were normal. The distal femoral epiphysis was normally open in both views. The proximal marker on the medial side had been extruded from the bone due to retubulation. (Markers are now inserted near the middle of the shaft.) The lateral markers were still accurately placed. Since June 20, 1947, there had been an increment at the distal end of the femur of 5.5 cm. This is well within the normal limits of Baldwin's tables, as arranged by Hatcher.[18]

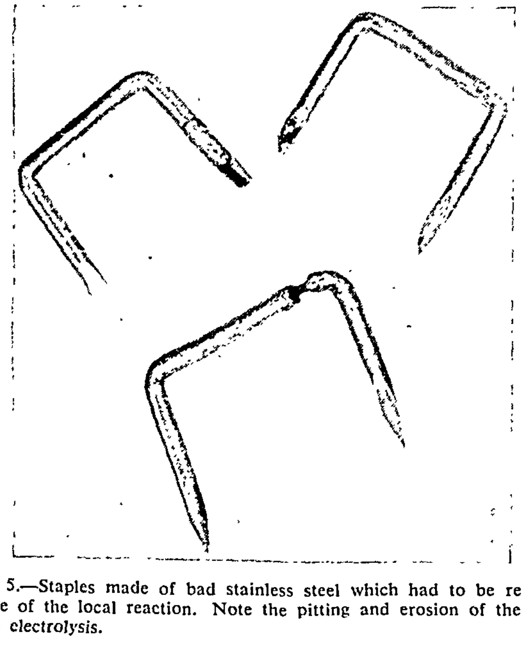


Fig. 5.—Staples made of bad stainless steel which had to be removed because of the local reaction. Note the pitting and erosion of the metal due to electrolysis.

TECHNIC OF INSERTION

In general, the technic of insertion is the same as in the original article.[33] If both the tibia and femur are to be stapled, the two oblique incisions may be joined posteriorly to form a long posterior convex curve. In the original article, in discussing the lateral side of the distal femoral epiphysis, an error was made in the text. The word "dorsal" should be "anterior" in the third sentence of the paragraph—that is, the incision in the fascia is made in the thin expansion just anterior to the dense iliotibial band, and about ½ in. (1.3 cm.) anterior to the intermuscular septum. Staples should not be buried under the periosteum if they are to be removed later. It is unnecessary to cut into the epiphyseal plate to identify it. Frequently in older children it can be seen shining through the periosteum. The cartilage may be identified by probing with a needle. In younger children a homogenous cartilage cap covers the entire bone end. Staples are inserted "blind" by palpating the cartilagenous landmarks and comparing with the x-ray appearance. Soft parts must be divided down to the periosteum. If movable fascial layers are impaled by the staples, there will be postoperative pain, swelling, and limitation of motion. The staples should always be pointed toward the center of the bone. The cc [illegible] mistake of in[illegible]tion is to allow one point of the posterior staple to protrude into the popliteal space. The obliquity of either the femoral or tibial condyle makes it likely that one point of the staple will enter the bone satisfactorily and the other not engage the cortex at all (Fig. 2 and 3). These mistakes should be checked by accurate x-rays in two planes. It is important to center the staples properly from front to back. Slight anterior displacement of the staples is a potent force in causing back knee, just as posterior displacement will correct this deformity.

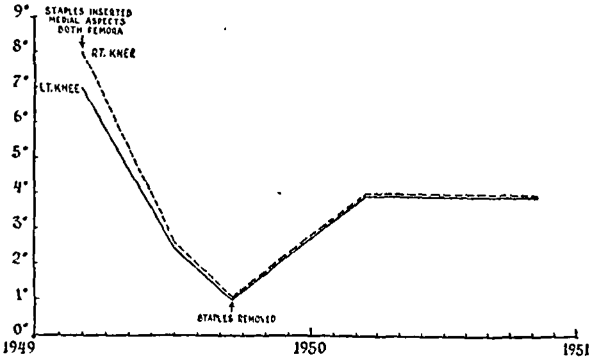


Fig. 6.—A graph of correction of the idiopathic genu valgum of M. B., aged 9, after insertion and removal of staples. The deformity was corrected from 7 to 8 degrees down to 1 degree in six months. After removal of the staples there was some recurrence of the deformity. The stimulus of removal caused a growth spurt of the medial sides of the femoral epiphyses. The growth rate returned to normal within six months, and the alignment of the legs remained constant. Most angular deformities should be overcorrected before the staples are removed.

Eight years is still the proper lower age limit for the average case. Occasionally in the well-developed child ling may be done earlier. It is technically difficult to e staples into the thick cartilaginous ends of the bones very young children. The staples spring out again. They are likely to bend and extrude with growth.

REMOVAL OF STAPLES

We first removed the staples when the angular or linear deformity had been just corrected. This was done in some cases with complete satisfaction. But in rapidly growing children knock knee deformities must be overcorrected. The removal of staples is sufficient stimulus to bone growth to cause a partial recurrence of the knock knee (Fig. 6). We now advise overcorrection of angular deformities before removal of the staples. Deformity produced by post-traumatic closure of an epiphysis at one margin must be corrected by osteotomy. Stapling will only prevent increase in the angulation. Staple the opposite leg if it is too long.

There are several factors influencing the time of removal of staples after the correction of linear deformities. When epiphyses have been stapled for two years or less (cases with longer intervals are being observed), the operation to take out the staples causes a growth spurt which overcomes some of the previous correction. But overcorrection should not be done, because a stapled epiphysis will mature more rapidly and will close a few months before the one on the opposite side (if the opposite side is normal). A little lost correction may be made up at the end of the race. If the stimulating factor is still present (osteomyelitis), linear deformities must be well overcorrected.

RATE OF GROWTH

The rate of growth after removal of staples is still uncharted. There are so many variables that every case is individual. There is rarely an occasion to staple one of two symmetrical legs. In general, it may be said that after removal of staples there is a growth spurt. An epiphyseal plate, which has become paper-thin, will rapidly expand until it is as thick or thicker than the one on the opposite side. This phenomenon has been observed also in experiments with puppies.[36] After a few months of acceleration growth continues at the normal rate.

NEW DEVELOPMENTS

Further experience has shown the wisdom of correcting complex deformities by asymmetrical stapling at one stage. Let us take the example of a boy with infantile paralysis, two weak legs, and a back knee, knock knee deformity on the long side. The old method of correction of the deformity was to place three staples posteriorly and medially in the femoral condyle. When the leg was straight with reference to the valgus position, more staples were placed posteriorly on the lateral side. The back knee was slower to correct than the knock knee but usually disappeared when the legs were of equal length.

It is simpler to place four staples medially and posteriorly on the femoral condyle and one laterally and posteriorly (Fig. 7).

The single staple will bend and allow some growth, while the four hold securely, so that the valgus position and back knee will straighten out simultaneously. The angular deformities will be corrected at about the time that the linear discrepancy is equalized, and all staples may be withdrawn at once. If growth is complete, the staples may be left in situ.

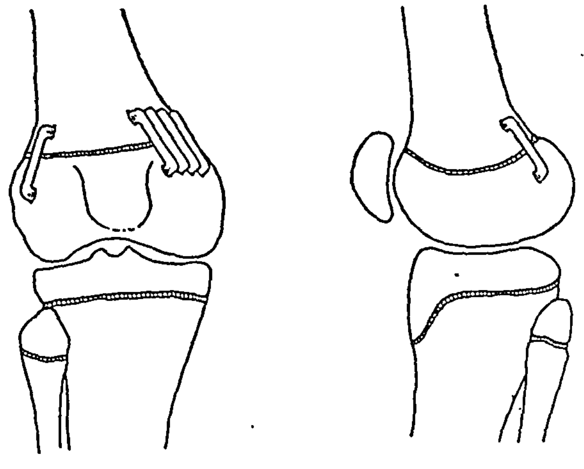


Fig. 7.—Sketch of the placement of staples to correct a knock knee, back knee deformity in a long leg. All deformities are corrected simultaneously by posterior placement of three or four staples in the medial femoral condyle and one in the lateral. When the result is obtained, all staples are removed if further growth is anticipated.

Recent experiments by Drs. Strabino and Colonna[41] have proved that a force in excess of 120 lb. (54.4 kg.) is required to stop the growth of an upper tibial epiphysis in a calf. This is no surprise. The growth force against the staples is tremendous. Single staples have repeatedly broken. Two staples on either side of the bone have bent excessively. Even three staples as a unit will bend if the growth spurt is rapid.

---

[41] Strabino, L. W., and Colonna, P. C.: Personal communication to the authors.

We were led to experiment with the forces involved. A hydraulic distractor was adapted to hold small blocks of bone or other material. If one staple is driven in calf bone or in 12-year-old human bone, a distraction force of only 80 lb. (36.3 kg.) will cause the staple to cut out. If one block is epiphysis while one is metaphysis, the staple will cut through the cancellous epiphysis and pull out of it. Maximum bending will take place at the metaphyseal angle.

Although staples cut out so easily, single staples have repeatedly broken in growing children. Accurate tests show that it takes 900 lb. (388.6 kg.) of pull to break a single staple. It is possible to develop this force in growing bone because of a biologic factor. Dense bone is deposited around the staples. This stops them from cutting. It prevents the legs from diverging. This adaptation of the growing bone ends explains the discrepancy between the available initial resistance of 80 lb. and the ultimate force of 900 lb. which must be developed to break the staple. Between these extremes, the staples have much more than the restraining force necessary to prevent longitudinal growth according to Strabino and Colonna.

In an article last year Eyre-Brook [42] has considered surgery only in discrepancies of leg length which exceed 1½ in. (3.8 cm.). Before accepting this figure, one must consider many factors. In growing children increasing discrepancy is frequently predictable. Then a difference of ½ in. (1.3 cm.), or even less, justifies stapling as a prophylactic measure. On the other hand, in a tall young adult, who is well adjusted to a short leg, a difference of 1½ in. may not be an indication for a femur shortening. After greater experience with the stapling procedure we have come to equalize lesser linear and angular deformities which are unsightly but only moderately disabling.

SUMMARY

As we learn more about the factors influencing bone growth in the human, combinations of bone stimulation and retardation will be used more and more to equalize linear and angular deformities. Stapling will be of practical importance until a better method of growth retardation is found. Epiphysiodesis is still a useful operation when growth arrest promises only incomplete correction. Bone shortening operations can never be abandoned. Lengthening is occasionally indicated. Growth stimulation is again on trial.

After the insertion or removal of staples the factors that influence growth are so complex that each case is individual. It is safe to say: 1. Staples may be left in place at least two years and then removed, with the expectation that growth will be resumed. 2. After removal of the staples there is a local growth spurt. This usually lasts only a few months. Then growth continues at the normal rate. 3. Epiphyseal closure is usually several months premature in a stapled bone. The factors which caused the previous discrepancy of length are often more important than the stapling in determining the relative time of closure. Further observation over a longer period of time is necessary before the last three items can be discussed further.

324 E. Wisconsin Ave. (Dr. Blount).

[42] Eyre-Brook, A. L.: Bone-Shortening for Inequality of Leg Lengths, Brit. M. J. *4700*: 222, 1951.

CYTOLOGICAL METHODS FOR EARLY DETECTION OF UTERINE CANCER

Douglas M. Haynes, M.D., Dallas, Texas, W. W. Brown Jr., M.D., Waco, Texas
Richard L. Hermes, M.D., Lawrence, Kan., C. R. Bates Jr., M.D.
and
William F. Mengert, M.D., Dallas, Texas

The introduction of cytological methods for the early diagnosis of uterine cancer has been a significant modern development in spite of waning emphasis on the morphological approach to clinical problems. The emergence of the method was the logical outcome of two separate series of investigations—the introduction of the concept of noninvasive carcinoma by Rubin [1] and the perfection by Papanicolaou [2] of technical methods for studying cells exfoliated from the female genital tract. The principle on which the method rests derives from phenomena implicit in the observations of Coman,[3] namely, that the force required mutually to separate normal cervical cells is some 10 times that required to separate the cells of squamous carcinoma of the cervix. The usefulness of exfoliative cytologic studies in the early diagnosis of uterine cancer has been extensively studied during the past eight years. Several investigators [4] have convincingly documented its relative reliability, and L'Esperance [5] effectively demonstrated that it has value as a screening technique in cancer prevention clinics.

The paramount contribution of the method to modern gynecology is its demonstrated reliability as a technique whereby clinically unsuspected cervical cancer may be discovered in its incipiency. Papanicolaou [2e] established solid criteria for the identification of malignant cells in suitably stained smears obtained from vaginal mucous surfaces, and Ayre [6] devised a highly satisfactory wooden spatula for scraping cells from the squamocolumnar junction of the cervix. Skapier [7] and Graham and Meigs [8] used the method as a large scale screening test, with gratifying results within its acknowledged limitations. The present paper adds to the published findings of these

---

From the Departments of Obstetrics and Gynecology of the Southwestern Medical School of the University of Texas and Parkland Hospital.

Read before the Section on Obstetrics and Gynecology at the One-Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

and other investigators the data derived from three years' intensive experience in the gynecologic clinic of Parkland Hospital.

STUDIES AND RESULTS

This study was carried out between Aug. 1, 1947, and Sept. 1, 1950, and was subsidized by a grant from the Texas Division of the American Cancer Society. During the entire period indicated, all patients coming to the gynecologic outpatient clinic of Parkland Hospital were routinely subjected to cytological screening of the cervix. Later, routine smears were taken on obstetric outpatients, and, for approximately one year, virtually the entire female personnel of the hospital, including volunteer hospital employees, were similarly screened.

Method.—Two smears were obtained on each patient: (1) Fluid aspirated from the cervical canal with a suction pipette was smeared thinly on a glass slide; (2) the squamocolumnar junction was denuded circumferentially with an Ayre spatula, and the material spread as evenly as possible on a slide. Smears made in this way were fixed immediately in equal parts of 95% alcohol and ether for at least one hour; they were then stained by the method of Papanicolaou,[4b] mounted, and screened for anaplastic cells.

Results.—In this study the smears from 6,816 women were examined (Table 1). One hundred twelve, or 1.64%, of these preparations proved to be from patients harboring cervical carcinomas. Seventy-six women, or 1.11%, had carcinomas which would have been discoverable by purely clinical means. The remaining 36 patients, or 0.53%, would have passed without suspicion of cancer through the office of the most competent gynecologist.

Biopsy confirmation of the 36 clinically unsuspected carcinomas brought to light 13 histologically invasive lesions; while the remaining 23 tissue preparations fulfilled the morphological criteria of so-called "noninvasive" carcinoma (Table 2). The diagnosis of noninvasive carcinoma was made in each case only after careful study of multiple serial sections failed to demonstrate breakthrough of the basement membrane with stromal invasion. Extension of the neoplastic epithelium into glands was not regarded as evidence of invasion, an interpretation contrary to the opinion of TeLinde [9] and in accordance with that of Younge, Hertig, and Armstrong.[10]

TABLE 1.—*Cytological Detection of Carcinoma of Cervix Uteri*

	No.	% of Total
Total patients surveyed *	6,816	100
Total patients with cervical carcinoma	112	1.64
Patients with clinical carcinoma	76	1.11
Patients with unsuspected carcinoma, detected by cytological methods	36	0.53 (1:189)

* From Aug. 1, 1947, to Sept. 1, 1950.

TABLE 2.—*Biopsy Diagnosis: Thirty-Six Patients with Unsuspected Cervical Carcinoma*

	No. of Patients
Noninvasive carcinoma	23
Invasive carcinoma	13

TABLE 3.—*Cytological Detection of Carcinoma of Corporal Endometrium*

Total patients surveyed *	6,816
Patients with proved carcinoma of endometrium	7 (0.1%)
Patients with positive cytological smear	4
Patients with false negative smears	3
Patients with false positive smears	0

* From Aug. 1, 1947, to Sept. 1, 1950.

TABLE 4.—*Average Ages of Patients with Unsuspected Cervical Carcinoma*

	Yr.
Patients with noninvasive cervical carcinoma	34.6
Patients with invasive cervical carcinoma	40.8
All patients with unsuspected cervical carcinoma	36.6
Youngest patient with noninvasive carcinoma	19
Youngest patient with invasive carcinoma	21

In our hands cytological studies proved to be considerably less successful in the early diagnosis of carcinoma of the corporal endometrium than in the detection of cervical cancer. Seven patients with carcinoma of the endometrium proved by curettage were encountered in the present series (0.1%). Four of these women had positive cytological smears; three did not (Table 3).

It is significant that the average age of the patients with unsuspected cervical carcinoma detected by cytological study was 36.6 years (Table 4) in contrast to the overall average of 48 years among women with clinical gross cervical cancer. Of these patients, those with histologically invasive lesions had an average age of 40.8 years, while those with noninvasive carcinomas had an average age of only 34.6 years. This observation is in close conformity with the findings of TeLinde and Galvin,[11] who

---

1. Rubin, I. C.: The Pathological Diagnosis of Incipient Carcinoma of e Uterus, Am. J. Obst. **62:** 668-676 (Oct.) 1910.

2. (*a*) Stockard, C. R., and Papanicolaou, G. N.: The Existence of a Typical Œstrous Cycle in the Guinea Pig: With a Study of Its Histological and Psychological Changes, Am. J. Anat. **22:** 225-283 (Sept.) 1917. (*b*) Papanicolaou, G. N.: New Cancer Diagnosis, Proceedings of the Third Race Betterment Conference, 1928, p. 528. (*c*) Papanicolaou, G. N.: The Sexual Cycle in the Human Female as Revealed by Vaginal Smears, Am. J. Anat. **52:** 519-637 (May) 1933. (*d*) Papanicolaou, G. N., and Traut, H. F.: The Diagnostic Value of Vaginal Smears in Carcinoma of the Uterus, Am. J. Obst. & Gynec. **42:** 193-206 (Aug.) 1941. (*e*) Papanicolaou, G. N., and Traut, H. F.: Diagnosis of Uterine Cancer by the Vaginal Smear, London, The Commonwealth Fund, 1943.

3. Coman, D. R.: Decreased Mutual Adhesiveness, a Property of Cells from Squamous Cell Carcinomas, Cancer Res. **4:** 625-629 (Oct.) 1944.

4. (*a*) Meigs, J. V.; Graham, R. M.; Fremont-Smith, M.; Kapnick, I., and Rawson, R. W.: The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer, I Surg., Gynec. & Obst. **77:** 449-461 (Nov.) 1943. (*b*) Meigs, J. V., and others: The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer: A Report of 1,015 Cases, ibid. **81:** 337-345 (Oct.) 1945. (*c*) Ayre, J. E.: A Simple Office Test for Uterine Cancer Diagnosis, Canad. M. A. J. **51:** 17-22 (July) 1944. (*d*) Ayre, J. E.; Bauld, W. A. G., and Kearns, P. J.: A Test Case to Show the Value of a Cervical Cytology Smear in Uterine Cancer Diagnosis, Am. J. Obst. & Gynec. **50:** 102-105 (July) 1945. (*e*) Ayre, J. E.: Vaginal and Cervical Cytology in Uterine Cancer Diagnosis, ibid. **51:** 743-750 (June) 1946. (*f*) Jones, C. A.; Neustaedter, T., and Mackenzie, L. L.: The Value of Vaginal Smears in the Diagnosis of Early Malignancy: A Preliminary Report, ibid. **49:** 159-168 (Feb.) 1945. (*g*) Fremont-Smith, M.; Graham, R. M., and Meigs, J. V.: Vaginal Smears as an Aid in the Diagnosis of Early Carcinoma of the Cervix, New England J. Med. **237:** 302-304 (Aug. 28) 1947. (*h*) Fremont-Smith, M.; Graham, R. M., and Meigs, J. V.: The Cytologic Method in the Diagnosis of Cancer, ibid. **238:** 179-181 (Feb. 5) 1948.

5. L'Esperance, E. S.: The Early Diagnosis of Cancer, Bull. New York Acad. Med. **23:** 394-409 (July) 1947.

6. Ayre, J. E.: The Selective Cytology Smear for Diagnosis of Cancer, Am. J. Obst. & Gynec. **53:** 609-617 (April) 1947.

7. Skapier, J.: Evaluation of the Cytologic Test in the Early Diagnosis of Cancer: A 2-Year Survey of the Routine Use of the Smear Technique, Am. J. Obst. & Gynec. **58:** 366-375 (Aug.) 1949.

8. Graham, R. M., and Meigs, J. V.: The Value of the Vaginal Smear, Am. J. Obst. & Gynec. **58:** 843-850 (Nov.) 1949.

9. TeLinde, R. W.: in Meigs, J. V., and Sturgis, S. H., Editors: Progress in Gynecology, New York, Grune & Stratton, Inc., 1946.

10. Younge, P. A.; Hertig, A. T., and Armstrong, D.: A Study of 135 Cases of Carcinoma in Situ of the Cervix at the Free Hospital for Women, Am. J. Obst. & Gynec. **58:** 867-895 (Nov.) 1949.

found an average age of 37.1 years for women with carcinoma in situ.

The commonest error to which the cytological method is subject is, in our experience, the false positive interpretation of a smear (Table 5). There were 18 smears reported as positive which did not prove to originate from carcinomatous lesions when biopsy studies were made. This represents an incidence of false positive error of 0.26%, which compares closely with the incidence of this type of error in the various series of Graham and Meigs.[8] Of interest was the observation that a characteristically positive smear was obtained from a patient later proved to have tuberculous cervicitis, an error which might reasonably be anticipated from consideration of the morphological features of tuberculosis, with its bizarre epithelioid and giant cell reactions. It is obvious that figures purporting to indicate incidence of false negative smears carry little significance, since many such errors will go undetected. Others [12] have estimated that the incidence of false negative reports approaches 10 to 30%.

The diagnosis of the lesions of the 36 patients with unsuspected carcinoma discovered by cytological smear was confirmed in each case by cervical biopsy. A modified Sturmdorf tracheloplasty technique was found to produce the most satisfactory tissue specimen for study, since the cone of tissue excised in this manner contains the entire squamocolumnar junction in its pristine state.

Methods of Treatment.—Table 6 summarizes the methods which were used in the treatment of the 36 patients with unsuspected carcinoma of the cervix discovered by cytological methods. By and large, the early invasive carcinomas were managed as carcinoma of the cervix in general. Seven Wertheim operations were performed; five patients were treated with standard radium and x-ray methods, while one patient with a concomitant tuberculous endometritis was treated with radium alone.

Of the 23 women with noninvasive carcinoma, 15 were treated by simple total hysterectomy, 5 by hysterectomy with gland dissection, and 1 each by hysterectomy followed by irradiation, removal of cervical stump, and the biopsy procedure of Sturmdorf tracheloplasty alone (the last patient refused further treatment).

DISCUSSION AND COMMENT

With the development of improved methods of treatment of the early stages of carcinoma of the cervix, there has arisen a fruitful field of opportunity for methods aiming at the early detection of these lesions. Numerous investigators have now established the reliability of the vaginal smear for this purpose, provided always that the limitations are understood and at all times kept clearly in mind. First, it must be impressed on everyone using the method that under no circumstances should any definitive therapeutic program be undertaken on the basis of a positive cytological smear alone; every positive smear must be checked by adequate tissue biopsy and treatment based on the histological report. Second, the interpretation of the smears must be undertaken only by persons adequately trained; untold harm may result if inadequately trained persons are entrusted with the screening of these smears. Third, it would appear that, for the present at least, interpretation of smears should be done in certain centers where adequately trained personnel are available. There are still enough limitations in the method to discourage its general adoption among practicing gynecologists, although when existing facilities for reading are expanded collection of smears may well become a standard item in the gynecologist's armamentarium. Such a trend would tend to be markedly accentuated by long term follow-up of patients with so-called noninvasive carcinoma. Fourth, there are certain economic considerations which may delay the widespread use of the method. In this study the average cost in materials and technician personnel alone amounted to $2.22 per patient studied, and the average cost of discovering each case of clinically unsuspected carcinoma of the cervix was approximately $357.45. This estimate is, of course, exclusive of any fee for the professional service of reading the slide. It is questionable whether so expensive a screening method should be routinely used in a gynecologic private practice. On the other hand, the cost does not prohibit use in selected patients.

TABLE 5.—*Diagnostic Errors in Vaginal Cytological Method*

	No.
Total patients surveyed	6,816
False positive	18 (0.26%)
Carcinoma of cervix	
False positive *	17
Carcinoma of corporal endometrium	4
False positive	1
False negative	3

* A false positive cervical smear proved to be from a tuberculous cervicitis.

TABLE 6.—*Treatment of Thirty-Six Patients with Unsuspected Carcinoma of Cervix*

Invasive carcinoma	
Radical hysterectomy (Wertheim)	7
Radium and x-ray	5
Radium alone	1
Noninvasive carcinoma	
Simple total hysterectomy	15
Hysterectomy with gland dissection	5
Hysterectomy and x-ray	1
Removal of cervical stump	1
Sturmdorf amputation alone *	1

* Patient refused further treatment.

SUMMARY AND CONCLUSIONS

Under a grant from the Texas Division of the American Cancer Society, 6,816 patients were subjected to vaginal cytological screening over the period from Aug. 1, 1947, to Sept. 1, 1950. One hundred twelve, or 1.64%, of these patients had cervical carcinoma; 76, or 1.11%, were clinically detectable; 36, or 0.53%, were clinically unsuspected. All positive cytological smears on preclinical lesions were confirmed by adequate biopsy. The average age of patients with unsuspected cervical carcinoma was 36.6 years. Of seven proved cases of carcinoma of the endometrium, in only four were there positive cytological smears. There were 18 false positive smears, or 0.26%. The obvious advantages of this method in screening early lesions of the cervix are partially offset by difficulties of interpretation and economic drawbacks.

2211 Oak Lawn (Dr. Haynes).

---

11. TeLinde, R. W., and Galvin, G.: The Minimal Histological Changes in Biopsies to Justify a Diagnosis of Cervical Cancer, Am. J. Obst. & Gynec. 48: 774-797 (Dec.) 1944.

12. Scheffey, L. C.: in Graham and Meigs.[8]

CLINICAL NOTES

REPAIR OF SURGICAL ABDOMINAL WALL DEFECT WITH TANTALUM MESH

Amos R. Koontz, M.D., Baltimore

Early in 1948 I operated on a woman with a large defect in the left upper abdominal quadrant resulting from a gunshot wound.[1] After many intestinal adhesions were released from the hernial sac, scarcely enough peritoneum remained for closure. The muscular and fascial defect was closed with tantalum mesh. This case made me wonder what would happen if I did have a case in which the peritoneum could not be closed and I wanted to use tantalum mesh. Therefore we [2] created large defects in the abdominal wall of dogs by removing the rectus muscle, fascia, and peritoneum. These defects were repaired with tantalum mesh. The greater omentum and spleen had also been removed, so that there would be no buffer between the intestines and the mesh. Perfect healing took place in these animals, and there were only mild adhesions between the loops of intestine and the mesh; the adhesions were in no way obstructive and did not interfere with the health of the animals. Soon after these experiments were completed, I had a case in which the results demonstrated could be applied clinically.

REPORT OF A CASE

History.—R. B. L., a white farmer aged 59, was first seen on Nov. 4, 1949. He had a birthmark on his abdomen. The mark was about the size of the end of his thumb until four years before he came to see me, when it began to grow. He had recently had six x-ray treatments and 12 years previously had had other x-ray treatments. The patient had also had a hernia on the right side for six or seven years and had worn a truss about six years, but the truss did not retain the hernia very well.

Physical Examination.—A large bluish-black birthmark 6 in. (15.2 cm.) in diameter in one direction and 5 in. (12.7 cm.) in another was situated just to the left of and below the umbilicus, involving the umbilicus. In the center of the area was one minute ulcerated spot, but otherwise the lesion seemed benign. It was flat and level with the skin. No lymph nodes were palpable in either inguinal region, but nodes were palpable in both axillas. One node in the left axilla was slightly larger and firmer than the rest. On the right side a scrotal hernia about the size of an orange was not retained by the truss. The hernia was almost completely reducible when the patient reclined, but not entirely.

Operative data.—Operation was performed at the Church Home and Hospital on Nov. 25, 1949, with the patient under thiopental (pentothal®) sodium, nitrous oxide, and curare anesthesia. The large melanoma was excised with a 1 in. (2.5 cm.) margin all the way around, along with subcutaneous tissue and abdominal fascia. In removing the umbilicus with the rest of the lesion, a large margin of peritoneum was excised. The specimen was sent to the laboratory, where it was examined immediately by the pathologist, Dr. Vernon Norwood, who reported that it was a melanotic sarcoma. The abdomen was opened wider and the liver palpated and inspected. No metastases could be found, nor could the round ligament of the liver be located. The wide gap in the peritoneum, occasioned by the removal of part o it with the umbilicus, could not be closed. The rectus muscle wa then dissected free from the underlying posterior sheath in wide area surrounding the gap, and a piece of tantalum mes 4 by 8 in. (10.2 by 20.3 cm.) was placed between the rectu muscle and the posterior sheath. The gap was effectively close where the peritoneum had been resected, but the intestines wer in immediate contact with the mesh, because the patient had short omentum that could not be brought down between th intestines and the mesh. The mesh was placed with only on suture, at the upper end. There was no buckling, and the mes lay flat between the posterior sheath of the rectus and the rectu muscle, covering well the peritoneal gap. Since the anterior rectus sheath had been resected with the melanoma, it could n be used to close the abdominal wall. The rectus muscles we closed with interrupted sutures as well as possible, but they coul not be closed in the region of the umbilicus, leaving a gap in th abdominal wall protected only by the underlying tantalu mesh.

From the upper outer margin of the round excised area up t the axilla a piece of skin, subcutaneous tissue, and fascia approximately 2 in. (5.0 cm.) wide was excised. Then the axillar nodes and all the axillary tissue were removed en bloc b radical axillary dissection with the strip of skin, subcutaneous tissue, and fascia. This mass of tissue was immediately examined by the pathologist, who reported that the glands appeared to b cellular but contained no melanin. Skin flaps were then dissected free in all directions, and the wound was closed as far as possible without too much tension. A defect in the abdominal wound 4 by 6 in. (10.0 by 15.2 cm.) could not be closed, in spite of the wide dissection of flaps. This defect was closed by split thickness grafts cut from the left thigh (see figure).

Photograph taken four and one-half months after operation while th patient was in the hospital for surgical repair of an inguinal hernia.

Convalescence was uneventful. The patient was discharged from the hospital on Dec. 23, 1949. He returned for repair of the right inguinal hernia on March 23, 1950. He was last examined on Nov. 15, 1951, at which time the abdominal wall and the site of the inguinal hernia repair were firm. There was no evidence of recurrence of the melanotic sarcoma. The final diagnosis was melanotic sarcoma of the abdominal wall and indirect inguinal scrotal hernia on the right side.

OTHER REPORTED CASES

Bussabarger, Dumouchel and Ivy [3] have reported a case in which massive resection of the abdominal wall was performed for adenocarcinoma of the cecum involving the anterior abdominal paries extensively. After the defect was closed as far as possible by approximating its edges, the remaining defect, measuring 3.5 by 5 in. (9.9 by 12.7 cm.), was closed by suturing a piece of tantalum gauze to the fascial edges. They had, however, been able to close the peritoneum first. The skin could not be completely closed. The peritoneal closure must have broken down subsequently, because during the convalescent period intestines floating in ascitic fluid could be seen through the screen. The wound eventually closed by granulation.

---

[1] (*a*) Koontz, A. R.: Tantalum Mesh in Hernia Repair: Experimental and Clinical Results, Tr. South. S. A. **60**: 394-403, 1948; (*b*) Tantalum Mesh in Repair of Ventral and Inguinal Hernias, South. Surgeon **16**: 1143-1148 (Dec.) 1950.

[2] Footnote 1*a*. Koontz, A. R., and Kimberly, R. C.: Tissue Reactions to Tantalum Mesh and Wire, Ann. Surg. **131**: 666-686 (May) 1950.

[3] Bussabarger, R. A.; Dumouchel, M. L., and Ivy, W. H.: Use of Tantalum Mesh to Repair Large Surgical Defect in Anterior Abdominal Wall, J. A. M. A. **142**: 984-985 (April 1) 1950.

Stafford[4] reports a case of defect in the abdominal wall following retropubic prostatectomy. The bladder wall bulged through the defect and was distressing to the patient whenever the bladder was full. The defect was closed with a piece of tantalum mesh placed next to the bladder wall. There have been no untoward effects.

SUMMARY

A case is reported in which, after resection of a melanotic sarcoma of the abdominal wall involving the umbilicus, the peritoneum could not be closed. The abdominal fascia had been resected, and the muscles could not be completely closed in the midline. Tantalum mesh was used to close the defect. The presence of intestine next to the tantalum has caused no difficulty.

1014 St. Paul St.

[4] Stafford, E. S.: Personal communication to the author.

ANAPHYLACTIC SHOCK FOLLOWING INTRAVENOUS ADMINISTRATION OF VITAMIN B COMPLEX

W. R. Chitwood, M.D.
and
C. D. Moore, M.D., Wytheville, Va.

Vitamin preparations for parenteral administration have been employed extensively by all branches of medicine. In view of their wide parenteral use the ratio of serious reactions to the number of injections given must be exceedingly small; however, severe anaphylactic reactions do occur from parenteral administration of vitamins and for this reason the following case is reported as a reminder.

Circulatory collapse from intravenous[1] and intramuscular[2] injections of thiamine hydrochloride has been reported. Anaphylaxis due to intravenous administration of nicotinic acid[3] and folic acid[4] has also been reported, but to our knowledge no instance of circulatory collapse following intravenous administration of vitamin B complex has been recorded.

REPORT OF A CASE

F. H., a 52-year-old white insurance agent, had received parenteral injections of vitamin B complex intermittently from several physicians for about a year because of nervousness, fatigue, and malaise. He was seen by one of us (C. D. M.) in the office on Nov. 22, 1948, and at his request was given 1 cc. of vitamin B complex intravenously. The product used was one containing in each cubic centimeter thiamine hydrochloride, 100 mg.; riboflavin, 1 mg.; pyridoxine, 5 mg.; nicotinamide, 100 mg., panthenol® (d-pantothenyl alcohol) equivalent to 1 mg. of calcium pantothenate; benzyl alcohol, 20 mg.; and sufficient isotonic sodium chloride solution to make 1 cc. The injection was made under routine aseptic conditions. Almost immediately the patient cried, "I am dying," became cyanotic, and fell to the floor. Respiration ceased, and there were generalized tetanic muscular contractions. The radial pulse and blood pressure could not be obtained. Approximately 0.5 cc. of 1:1,000 epinephrine solution was given intravenously, and artificial respiration with oxygen was instituted. After three to five minutes respiratory movements returned, and the cyanosis gradually cleared, in about one-half hour. The pulse, although weak, was palpable about this time. Blood pressure determination was not repeated. Moist rales could be heard at the bases of the lungs.

The patient was admitted to the hospital and became conscious about one hour after the injection of vitamin B complex. On regaining consciousness he complained of a severe generalized headache. The headache was accompanied by nausea and vomiting. Morphine sulfate, ¼ grain (15 mg.), was administered, and later meperidine (demerol®) hydrochloride, 50 mg. every four hours, controlled the pain. The next morning the patient felt fairly well but was restless and slightly nauseated. He improved rapidly and was discharged on the third hospital day.

Results of laboratory examinations, including routine urinalysis, determination of hemoglobin level, and red blood cell count were normal the day after admission. The white blood cell count was 12,600. An electrocardiogram made about one and a half hours after the injection revealed isoelectric T waves in leads 1 and V2. The T waves were low in leads 2, 3, and V5. The T wave was inverted slightly in V4. A deep Q3 wave was present, and the QRS interval was 0.10 second in the limb leads. Another tracing two days later showed that the T waves had become upright in leads 1, 2, V2, and V4, and inverted in lead 3. The Q3 wave had disappeared.

On close questioning after the patient felt well enough to discuss the episode, it was learned that several months prior to this injection he had noticed dizziness and weakness after an intramuscular injection of vitamin B complex. After that, however, he had received several intramuscular and intravenous injections with no ill-effect.

This case illustrates several points. First, vitamin preparations should be given orally when that route is feasible. Second, in the few selected cases in which intravenous administration of vitamins is necessary, it should be done slowly, and probably the preparation should be diluted to avoid speed reactions. Third, any patient who is to receive vitamins parenterally should be questioned closely about any symptoms following previous injections. In this way a sensitivity may be found and thus a severe reaction may be prevented. Pelner[3a] has suggested that a skin sensitivity test be made prior to parenteral administration of nicotinic acid. Weigand[5] has advised this also in his report of 179 cases of sensitivity to thiamine hydrochloride. Fourth, epinephrine should be at hand, preferably in a syringe, when parenteral administration of vitamins is contemplated. Finally, the circulatory collapse that occurred here caused definite coronary insufficiency, as evidenced by electrocardiographic changes. This possibility should be kept in mind, especially in older patients with arteriosclerosis, as myocardial infarction could easily ensue.

---

[1] Armanino, L. P., and Scott, W. S., Jr.: Anaphylactic Shock Following Intravenous Administration of Thiamine Chloride, California Med. **72**: 178-179 (March) 1950.

[2] Schiff, L.: Collapse Following Parenteral Administration of Solution of Thiamine Hydrochloride, J. A. M. A. **117**: 609 (Aug. 23) 1941.

[3] (*a*) Pelner, L.: Anaphylaxis to Injection of Nicotinic Acid (Niacin): Successful Treatment with Epinephrine, Ann. Int. Med. **26**: 290-294 (Feb.) 1947. (*b*) Powers, B. R.: Circulatory Collapse Following Intravenous Administration of Nicotinic Acid (Niacin), ibid. **29**: 558-560 (Sept.) 1948.

[4] Mitchell, D. C.; Vilter, R. W., and Vilter, C. F.: Hypersensitivity to Folic Acid, Ann. Int. Med. **31**: 1102-1105 (Dec.) 1949.

[5] Weigand, C. G.: Reactions [illegible] to Administration of Thiamine Chloride, Geriatrics **5**: 274-[illegible] -Oct.) 1950.

SUMMARY

A case of circulatory collapse following the intravenous administration of vitamin B complex is reported. Several facts illustrated by this case are listed.

FACTOR 5 DEFICIENCY IN HEMORRHAGIC DIATHESIS (PARAHEMOPHILIA)

Stuart W. Cosgriff, M.D.
and
Edgar Leifer, M.D., New York

Normal plasma has been reported to contain a globulin which is a highly active accelerator of blood clotting. This factor acts by catalyzing the interaction of prothrombin, thromboplastin, and calcium in the formation of thrombin. In the absence of this factor blood clotting is delayed markedly. Owren[1] in 1944 discovered this new factor, which he called the fifth coagulation factor, or Factor 5. Fantl and Nance[2] and Ware, Guest, and Seegers[3] also demonstrated this new factor and its mechanism of action, calling it "accelerator globulin" or Ac-globulin. Quick's labile factor[4] may be very similar to or identical with Factor 5. In vivo deficiency of this factor was reported by Owren[1] as the mechanism of a hemorrhagic diathesis in a 29-year-old woman. This deficiency of Factor 5, considered to be congenital, characteristically was associated with a prolonged clotting time of venous blood and a prolonged one-stage prothrombin time. Owren termed this disease "parahemophilia."

An instance of severe postoperative hemorrhagic diathesis has recently been observed in a 66-year-old man with a profound decrease of Factor 5 (Ac-globulin) in his blood.

REPORT OF A CASE

L. D'A., a 66-year-old man, was admitted to the urological service of Presbyterian Hospital on Sept. 21, 1950, for a bilateral orchiectomy as treatment for carcinoma of the prostate gland with extensive bone metastases.

In 1945, at the age of 60, he had experienced a myocardial infarction, from which he made an uneventful recovery. There was no history of previous bleeding tendency in the patient or in his family. Operative procedures for removal of a ruptured appendix, total thyroidectomy, and treatment of sinusitis had been performed during the preceding 20 years without hemorrhagic complications.

Three years prior to admission the patient first noted a mass, which was firm and fixed, in the left supraclavicular fossa. In December, 1947, because of its rapid growth, he was admitted to another hospital. Biopsy of the mass was performed and on histological examination it was thought to be a metastatic carcinoma, probably originating from the thyroid gland. Examination of the thyroid disclosed no unusual conditions and a skeletal survey revealed no metastases. A two-stage total thyroidectomy with left radical neck dissection was performed, but a serial section of the thyroid did not reveal a carcinoma. After this operation he was maintained in a relatively euthyroid state on 30 mg. of thyroid extract per day; he had no further evidence of local recurrence of carcinoma in the neck.

At that time (1947) rectal examination revealed a nodule in the upper left pole of the prostate gland which was suspected to be carcinoma. The acid phosphatase level was normal, and there was no evidence of local extension. From the spring of 1948 to September, 1950, he was followed in the urology clinic and intermittently received diethylstilbestrol in doses of 15 to 100 mg. per day. The only urinary symptom was mild nocturia. Bone metastases to the skull and pelvis were discovered by x-ray examination in July, 1950. Because of increasingly severe pain in the lower back and the right knee, an orchiectomy was recommended.

On admission the temperature was 99.4 F, the pulse rate 84, respirations 20, and blood pressure 140/90. The skin over the neck was atrophic and pigmented, a secondary result of radiation. No petechiae, ecchymoses, or jaundice were noticed. The lymph nodes were not enlarged, and the spleen was not palpable. There were no masses in the neck. The prostate gland was small, hard, irregular, and fixed.

The complete blood cell count revealed a hemoglobin concentration of 10 gm. per 100 cc., 3,330,000 red blood cells per cubic millimeter and 7,350 white blood cells per cubic millimeter, with a normal differential count. The urinalysis showed a specific gravity of 1.015 and albumin (2+), but otherwise the urine was normal. The serum alkaline phosphatase value was 7.2 Bodansky units, the serum acid phosphatase value was 36.8 Gutman units and the erythrocyte sedimentation rate was 11 mm. in one hour (Westergren). The blood urea nitrogen level was 17 mg. per 100 cc. and the fasting blood sugar level, 136 mg. per 100 cc. Serum proteins were 6.5 gm., per 100 cc. An electrocardiogram taken on admission showed an abnormal record typical of left ventricular hypertrophy and evidence of an anterior myocardial infarction of unknown date. Skeletal roentgenograms showed extensive osteoblastic metastases.

On September 25, a bilateral orchiectomy was done under thiopental (pentothal®) sodium, nitrous oxide, and oxygen anesthesia. The procedure was uneventful, and the amount of bleeding at operation did not appear to be unusual. Immediately after the operation the patient bled considerably from the wound, the dressing being soaked with blood and requiring several changes despite exertion of pressure. Approximately 15 hours after the operation he complained of severe anterior squeezing chest pain and weakness. He was apprehensive, pale, and clammy. The radial pulse was weak at the rate of 80 per minute, the heart sounds were distant, and the blood pressure was 120/70. There were no signs of congestive failure. The electrocardiogram taken at that time showed changes suggestive of a recent myocardial infarction. The hematocrit reading was 26%. He was treated with oxygen and sedation.

Pressure dressings failed to stop the bleeding, and a large ecchymotic area appeared over the scrotum, extending down over the perineum and up over the lower part of the abdomen and inguinal regions. Venipunctures continued to ooze for 24 hours. The clotting time of venous blood and the prothrombin time were markedly prolonged at this time. Because of these abnormal findings, other coagulation studies were undertaken. The patient was treated with fresh whole blood transfusions to combat blood loss and to correct the clotting defect. However, he continued to go downhill in a state of circulatory collapse and died of cardiac insufficiency 40 hours after the operation. Permission for autopsy was refused.

Blood Coagulation Studies.—Venous clotting time determinations were performed according to a modification of the Lee-White technic,[5] using 1 cc. of blood in each of four saline-rinsed 75 by 10 mm. test tubes. (Normal values range up to 20 minutes.) This patient's blood had not clotted 18 hours after venipuncture.

Admixture of normal blood in the ratio of approximately 1:10 reduced the venous clotting time of more than 18 hours to three minutes.

From the Department of Medicine, College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital.

[1] (*a*) Owren, P. A.: New Investigation in Coagulation of Blood, Proc. Norwegian Acad. Sc. **17**: 21, 1944. (*b*) Owren, P. A.: Parahæmophilia: Hæmorrhagic Diathesis Due to Absence of Previously Unknown Clotting Factor, Lancet **1**: 446, 1947.

[2] Fantl, P., and Nance, M.: Acceleration of Thrombin Formation by Plasma Component, Nature, London **158**: 708, 1946.

[3] Ware, A. G.; Guest, M. M., and Seegers, W. H.: Factor in Plasma Which Accelerates Activation of Prothrombin, J. Biol. Chem. **169**: 231, 1947.

[4] Quick, A. J., and Stefanini, M.: Concentration of Labile Factor of Prothrombin Complex in Human, Dog, and Rabbit Blood: Its Significance in Determination of Prothrombin Activity, J. Lab. & Clin. Med. **33**: 819, 1948.

[5] Lee, R. I., and White, P. D.: Clinical Study of Coagulation Time of Blood, Am. J. M. Sc. **165**: 495, 1913.

The prothrombin time by the Link-Shapiro[6] modification of the Quick one-stage technic (normal 15±1 sec.) was more than 200 seconds on two specimens.

The plasma prothrombin assay[7] by the two-stage method[8] (with Factor 5 added) was 70% of normal.

The thrombocyte count by the direct method was 72,000 per cubic millimeter (normal 150,000 to 250,000).

Fibrinogen was demonstrated to be present by the coagulum formed when the plasma was heated to 56 C for five minutes. Later studies by electrophoretic analysis revealed that the fibrinogen was reduced to approximately 50% of normal.

Factor 5 was assayed[7] according to the method of Flynn and Stanley[9] and revealed a marked decrease (less than 10% of normal) of this activity from the plasma.

Results of electrophoretic analysis of plasma in phosphate buffer solution with a pH of 7.4 were not strikingly abnormal, revealing 47.8% albumin, alpha-1 globulin 11.3%, alpha-2 9.6%, beta 17.4%, fibrinogen 2.6%, and gamma globulin 11.3%.

COMMENT

This man had an extremely severe hemorrhagic dyscrasia. It is apparent that there was a moderate decrease in thrombocytes, fibrinogen, and prothrombin. However, the magnitude of the bleeding abnormality was out of proportion to these moderate divergencies.

*Clinical and Laboratory Characteristics of Two Patients with Parahemophilia**

	Case 1 (Owren)	Case 2 (Cosgriff and Leifer)
Age, yr.	29	66
Sex	F	M
Underlying disease	None	Metastatic carcinoma
Family history of bleeding	None	None
Bleeding tendency duration	26 yr.	36 hr.
Site	Retinal, nasal, menstrual, joint, skin ecchymoses	Operative area
Thrombocytes/cu. mm.	400,000	72,000
Venous clotting time †	25 min.	18+ hr.
One-stage prothrombin time, sec.	70-80	200+
Fibrinogen	Normal (300 mg. %)	50% Normal
Factor 5	Markedly decreased; less than 10% of normal	Markedly decreased; less than 10% of normal

* Both patients had normal blood cell counts with no demonstrable circulating anticoagulant.

† The addition of normal blood to venous blood of both patients caused a return of the clotting time to normal.

The observation that a small amount (0.1 to .02 cc.) of normal blood caused the patient's blood (1 cc.) to clot almost instantly may be interpreted as excluding the presence of a circulating anticoagulant and indicating a clotting factor deficiency.

The profound decrease of Factor 5 is compatible with the marked prolongation of the coagulation time of venous blood and one-stage prothrombin time.

Although Factor 5 has been of extreme interest from the research viewpoint in the laboratory, this patient is only the second with a clinical hemorrhagic tendency in whom Factor 5 deficiency has been reported as the major coagulation abnormality in the hemorrhagic state. In the accompanying table the clinical and laboratory characteristics of Owren's patient[1] and of the patient reported here are compared. In this second patient the severity of the hemorrhagic tendency and the degree of abnormality of the clotting and prothrombin times were more pronounced than in the patient studied by Owren. In both patients the clotting abnormality appears to be temporarily remediable by transfusi[illegible] norm

Factor 5 is found in the globulin portion of the plasma proteins. Electrophoretic analysis was not reported in Owren's case; electrophoretic study of the plasma proteins in our patient revealed nothing essentially abnormal except for some increase in the alpha-1 globulin. In this patient the deficiency of Factor 5 was apparently an acquired one, but the cause is unknown.

SUMMARY

A severe hemorrhagic dyscrasia was encountered in a 66-year-old man. There was a marked decrease of accelerator globulin (Factor 5) in the patient's blood. This Factor 5 abnormality appears to have been acquired and to have been the major factor responsible for extensive postoperative hemorrhage.

180 Fort Washington Ave. (Dr. Cosgriff).

---

6. Shapiro, S.; Sherwin, B.; Redish, M., and Campbell, H. A.: Prothrombin Estimation: Procedure and Clinical Interpretations, Proc. Soc. Exper. Biol. & Med. 50: 85, 1942.
7. These tests were performed by the Department of Pathology, Columbia University College of Physicians and Surgeons, under the direction of Dr. Joseph Flynn.
8. Seegers, W. H.: Two-Stage Prothrombin Determination, in Conference on Blood Clotting and Allied Problems: Transactions of First Conference, New York, Josiah Macy, Jr., Foundation, 1948, p. 152.
9. Flynn, J. E., editor: On Conversion of Prothrombin to Thrombin, in Conference on Blood Clotting and Allied Problems: Transactions of Second Conference, New York, Josiah Macy, Jr., Foundation, 1949, p. 145.

TETRAETHYLTHIURAMDISULFIDE (ANTABUSE®) THERAPY

REPORT OF TWO CASES

Edward A. Strecker, M.D.
and
Vincent T. Lathbury, M.D., Philadelphia

About two years ago reports began to appear in the medical literature on the use of a substance, tetraethylthiuramdisulfide, more popularly known as antabuse.® The ingestion of this substance appeared to sensitize persons to the use of alcohol. In a patient receiving as little as 500 mg. of tetraethylthiuramdisulfide daily, the ingestion of 30 cc. or more of gin or its alcoholic equivalent will shortly be followed by symptoms that include a feeling of heat in the face and intense flushing of the face, and sometimes of the neck and chest. Probably the most characteristic effect is dilatation of the scleral vessels. A little later, palpitation and dyspnea develop, and in severe cases nausea and vomiting occur. These symptoms usually disappear within a few hours, leaving the person rather sleepy.

Production of the above-described symptoms depends upon the fact that in the presence of tetraethylthiuramdisulfide considerable quantities of alcohol are converted into acetaldehyde. The same train of symptoms can be reproduced by intravenous infusion of acetaldehyde directly into the bloodstream. In the absence of alcohol the tetraethylthiuramdisulfide circulates in the bloodstream unchanged and is gradually eliminated, mostly by the kidneys, over a four to five day period [illegible] istration is stopped.

The drug is well tolerated by [illegible] larger than those commonly emp[illegible] traindicated in persons s[illegible] liver damage. It is usually offered in 500 mg. tablets. Patients may be given three tablets daily for three to four days, after which two tablets daily are given for four to five days. Most patients can be maintained on one tablet daily, though some are said to require one and one-half to two tablets. The effectiveness of the blood level of the drug can be tested at any time, since the ingestion of a glass or two of beer should be enough to evoke a mild reaction when the proper level is maintained. Sensitivity reactions are apparently rare, and most authors appear to feel relatively secure about the use of the drug in the clinical treatment of alcoholism. With this in mind, then, and with an eye to the fact that its use is apparently about to become much more widespread, it is felt that any untoward reactions connected either directly or indirectly with the employment of tetraethylthiuramdisulfide should be of interest and concern to the medical profession.

Following is a brief report of two cases of alcoholism in which this drug was used. While it is not possible to state as a certainty that the reactions reported were due to tetraethylthiuramdisulfide, and, if so, the exact modus operandi, nevertheless, under the circumstances it seems a reasonable assumption to make.

Case 1.—*A 56-year-old woman had been troubled with mild* recurrent depressions since the death of her husband 10 years previously. For the last five years she had been a problem to her family because of a tendency toward impulsive and excessive drinking occurring during the periods of depression. Inasmuch as the depressive intervals occurred two to three times a year and lasted for three to eight weeks, the management of the patient's alcoholic proclivities at these times was completely unsatisfactory from a medical viewpoint and very distressing in terms of family relationships.

It was felt that tetraethylthiuramdisulfide might prove to be the answer in this situation. The patient was admitted to the institute, where she was given three 500 mg. tablets daily for the first four days, then two daily for four more days, and after that a maintenance dose of one tablet daily. On the eighth day of hospitalization she began to complain of feeling a little confused at times, and it was noted that she appeared somewhat tense, agitated, and anxious. The next day, though she had no further complaints, the same symptoms prevailed and it was noted that she looked a bit suspicious. By the following day an outright psychosis had developed. She was suspicious, heard voices talking about her, and felt that there was a "court order" out for her and that she must find out who was behind the plot. She stated she heard the physician and nurse talking all night outside her door and demanded to know what it was all about.

Administration of tetraethylthiuramdisulfide was discontinued at this point, but for the next five days the acute paranoid episode continued, at the end of which time it cleared up very suddenly, within 24 hours. The findings on the physical and neurological examinations, both before and during the attack were normal. The case has been followed since that time, and there has been no further deviation from the original clinical picture.

Case 2.—A 36-year-old man gave a history of alcoholism for the past 20 years. At the age of 16 his father, who was an alcoholic, used to take him on drinking bouts for company. The patient said, "I had to get drunk myself to be able to stand it." Since his discharge from the Navy in 1945, his drinking had got completely out of his control, so that he was unable to work, to maintain ordinary social relationships, or even to be a patient for more than a few weeks in any but a closed-ward hospital.

Intensive, long-term psychotherapy was of no avail. The patient was never able to talk about himself except on a most superficial level, and one always felt that no real rapport existed between the physician and the patient. It was hoped, therefore, that with tetraethylthiuramdisulfide he might be controlled well enough to make a reasonable adjustment. The patient was hospitalized and placed on a dosage of one 500 mg. tablet of the drug three times daily for four days; then one tablet was administered twice daily for a week, at which time a maintenance dose of one tablet daily was instituted. After 10 days in the hospital he began to complain of feeling confused at times, and i *was noted* that for the first time in the course of his illness he appeared anxious. During the next week he became progressively more confused, until he was completely unmanageable and had to be transferred to a closed ward. Use of tetraethylthiuramdisulfide was discontinued when confusion became noticeable.

After transfer the patient became acutely psychotic. For the next three weeks he was completely disoriented as to time, place and person. He had hallucinations of fires, bombings, and various episodes of mass destruction. He accused the therapist of attempt*ing to castrate him* and threatened retaliation in kind. Though never actually making assaults during this period, he frequently seemed on the verge of doing so. During the last two weeks in the hospital his mental status cleared progressively, and he wa discharged.

Admission physical and neurological examinations, as wel as several subsequent checkups, gave normal findings. The patient has been followed until about six months ago, and it i interesting that he has been able to control his alcoholic intak reasonably well since discharge.

CONCLUSIONS

It is generally accepted that alcoholism is a defense or the acting-out of defenses, against unconscious conflicts that are extremely frightening to the patient. Alcohol is necessary to a person, therefore, in direct ratio to his fear of these conflicts breaking through into consciousness. In patients who have suddenly stopped drinking through sheer force of will, as it were, it is not uncommon to see a pronounced personality change as new defenses are acquired. The families of these persons, in fact, not too infrequently state that the alcoholic personality was better than the postalcoholic one. It is fel that in the two cases here reported, the patients, when threatened with a breaking through of strong and uncontrollable conflictual feelings, habitually and instinctively dealt with the situation by sedating themselves to coma or near-coma point with alcohol. Because tetraethylthiuramdisulfide made them unable to tolerate alcohol, this protection was denied them, with the result that a complete personality disintegration took place.

It is noteworthy that neither of these patients wished to take the drug and agreed to it more because of the insistence of relatives than because of any real desire on their own part.

There is general agreement that all alcoholics are psychologically unstable persons and that not a few are extraordinarily sick. With this in mind, it is probable that with the widespread and continued use of tetraethylthiuramdisulfide such cases as those described might not be too uncommon and that psychosis as a concomitant of therapy with the drug is something to guard against.

111 N. 49th St. (Dr. Strecker).

Splenectomy in Purpura of Children.—Adequate criteria for splenectomy in idiopathic thrombopenic purpura of children have not been established. Viewed against *the background* of the natural course of the disease, successful results in cases treated by early splenectomy cannot be attributed to the operation, since spontaneous recovery is the rule. *In chronic* cases, splenectomy may or may not result in a cure. Splenectomy in children should probably be reserved for cases of uncontrollable bleeding and chronic recurrent purpura.—*William A.* Newton, Jr., and Wolf W. Zuelzer, M.D., *Idiopathic* Thrombopenic Purpura *in Childhood, The New England Journal of Medicine,* Dec. 6, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The Council has authorized publication of the following report to the Committee on Research, a standing committee of the Council on Pharmacy and Chemistry.

R. T. STORMONT, M.D., *Secretary.*

The Committee on Research has adopted the following report on khellin. This research project was made possible by a contract grant from the Physicians Drug and Supply Company to the investigators through the Committee on Research.

PAUL L. WERMER, M.D., *Secretary.*

CLINICAL AND EXPERIMENTAL STUDY OF USE OF KHELLIN IN TREATMENT OF ANGINA PECTORIS

Herbert N. Hultgren, M.D.
H. Schuyler Robertson, M.D.
and
Leyland E. Stevens, M.D., San Francisco

Khellin is a crystalline extract of a crude drug which has long been used in Egypt for the treatment of ureteral colic.[1] The pure crystals were independently isolated in 1930 by Fantl and Salem [2] and by Samaan.[3] Further studies of its chemical structure were made by Spaeth and Gruber [4] in 1941. Animal experiments later demonstrated that khellin is a coronary dilator with an action greater than that of aminophylline but not as great as that of amyl nitrite.[5] Khellin's duration of action is prolonged and it is relatively nontoxic and free from undesirable circulatory side-effects. These results prompted Anrep and his workers to use it clinically in patients with angina pectoris.[5] They found that the daily oral administration of khellin to 250 patients with mild to severe angina resulted in the complete cessation or a significant reduction in frequency and intensity of attacks in 140 patients.[5c] Since then several clinical trials of khellin in angina pectoris have been made. Most reports indicate favorable results.[6] One carefully controlled study indicated that it was of no value.[7] Khellin has also been used in bronchial asthma [6a,h] and in pertussis.[8]

This report will present the results of a clinical and experimental evaluation of khellin in the treatment of selected cases of angina pectoris observed during the past 18 months at the Stanford Hospital.

METHOD

Patients were selected who experienced from 1 to 30 attacks of angina during ordinary daily activity and who demonstrated that they were cooperative and reliable observers of their symptoms. The diagnosis of angina pectoris had been verified by careful study in the outpatient clinic and in most instances diagnostic changes in the electrocardiogram were observed after exercise (fig. 1). A "blind test" technique similar to that described by Greiner and co-workers [7] was employed. Each patient kept a daily report card on which he recorded the time each attack of pain occurred, the number of glyceryl trinitrate (nitroglycerin) tablets used, and any symptoms that might be caused by the medication being given. Patients were usually seen at weekly or biweekly intervals and their cards were examined and verified. Studies were controlled by not giving medication for the first week or two. Patients were then given a numbered box containing either 50 mg. tablets of khellin or identically appearing and tasting, inert placebos. The nature of the medication was unknown to the patient and usually to the person conducting the test. An effort was made to alternate periods of placebo and khellin administration with periods during which a report card was kept but tablets were not given. At the conclusion of the study the data on the report cards were tabulated and the results summarized.

TABLE 1.—*Toxic Effects of Khellin in Twenty-Five Cases*

Gastrointestinal Symptoms	General Symptoms	Miscellaneous Symptoms (rare)
Anorexia	Weakness	Loose stools
Nausea	Fatigue	Increased perspiration
Vomiting	Depression	Increased salivation
	Confusion	Postural hypotension
		EKG changes

TABLE 2.—*Minimal Toxic Doses of Khellin in Twenty-Two Cases*

Milligrams per day	25	50	75	100	125	150	200	300
Number of cases....	1	3	1	4	1	7	3	2

RESULTS

Of the entire group of 30 patients studied, 14 were followed for a sufficient length of time and were considered reliable enough observers to warrant inclusion in this report. The results are summarized in figure 2. The vertical columns indicate the mean frequency of attacks per period of six days. A six day period was selected because, initially, most report cards covered this period of time, the seventh day of the week usually not being recorded since medication frequently was changed on that day. Later, when the dose was adjusted, two week periods of observation were used. The total number of days the patient was studied on each regimen is indicated below each vertical column. A similar graph was constructed for glyceryl trinitrate requirements, but the results were so comparable to the frequency of pain that a presentation of only one graph is necessary.

The 14 patients can be divided into two groups of 7 each: (1) Those who experienced a distinct reduction in frequency of anginal attacks (30% or more) while receiving khellin, compared with control periods of placebo administration. Their data are summarized in the upper portion of the figure. (2) Those who experienced no significant reduction (less than 25%) in anginal attacks during khellin administration. Their data are summarized in the lower portion of the figure.

From the Department of Medicine, Stanford University School of Medicine.

1. Ibrahim, A.: Stones of the Ureter, Brit. J. Urol. **1**: 396 (Dec.) 1929. Samaan, K.: Treatment of Spasm of the Ureter and of Ureteral Stone by Ammi Visnaga, Brit. J. Urol. **3**: 294 (Sept.) 1931.

2. Fantl, P., and Salem, S. I.: Chellol-Glucosid, Biochem. Ztschr. **226**: 166, 1930.

3. Samaan, K.: The Isolation and Properties of Visammin, Visammidin, Visnaginin, Visnagidin, Khellinin, Khellidin and Visnagan, Quart. J. Pharm. & Pharmacol. **4**: 14, 1931.

4. Spaeth, E., and Gruber, W.: Die Constitution des Chellol-Glucosids aus Ammi Visnaga, Lam. Ber. Chem. Ges. **74**: 1549, 1941.

5. (*a*) Kenawy, M. R., and Barsoum, G. S.: Ammi Visnaga in the Treatment of the Anginal Syndrome, Gaz. Faculty Med. Cairo **13**: 33, 1945. (*b*) Anrep, G. V.; Barsoum, G. S.; Kenawy, M. R., and Misrahy, G.: Ammi Visnaga in Treatment of Anginal Syndrome, Brit. Heart J. **8**: 171 (Oct.) 1946. (*c*) Anrep, G. V.; Kenawy, M. R., and Barsoum, G. S.: Coronary Vasodilator Action of Khellin, Am. Heart J. **37**: 531 (April 1) 1949.

6. (*a*) Anrep, G. V.; Barsoum, G. S.; Kenawy, M. R., and Misrahy, G.: Therapeutic Uses of Khellin, Lancet **1**: 557 (April 26) 1947. (*b*) Ayad, H.: Khellin in Angina Pectoris, ibid. **1**: 305, 1948. (*c*) Armbrust, C. A., Jr., and Levine, S. A.: Treatment of Angina Pectoris with Preparation of Khellin (Ammi Visnaga), Am. J. M. Sc. **220**: 127 (Aug.) 1950. (*d*) Best, M. M., and Coe, W.: Effect of Khellin on Coronary Artery Insufficiency as Evaluated by Electrocardiographic Tests, Circulation **2**: 344 (Sept.) 1950. (*e*) Dewar, H. A., and Grimson, T. A.: Khellin in the Treatment of Angina of Effort, Brit. Heart J. **12**: 54 (Jan. 1) 1950. (*f*) Osher, H. L.; Katz, K. H., and Wagner, D. J.: Khellin in Treatment of Angina Pectoris, New England J. Med. **244**: 315 (March 1) 1951. (*g*) Lian, C., and Charlier, R.: Etude Expérimentale et Clinique De La Khelline, Acta Cardiol. **5**: 373, 1950. (*h*) Rosenman, R. H.; Fishman, A. P.; Kaplan, S. R.; Levin, H. G., and Katz, L. N.: Observations on the Clinical Use of Visammin (Khellin), J. A. M. A. **143**: 160 (May 13) 1950. (*i*) Drezner, H. L., and Horoschak, S.: Angina of Effort: Its Treatment with Crystalline Khellin, J. M. Soc. New Jersey **48**: 116 (March) 1951.

7. Greiner, T., and others: Method for Evaluation of Effects of Drugs on Cardiac Pain in Patients with Angina of Effort; Study of Khellin (Visammin), Am. J. Med. **9**: 143 (Aug.) 1950.

8. Khalil, A., and Safwat, A.: Use of V
Whooping Cough, Am. J. Dis. Child. **79**: 42,

It would appear that khellin is of some value in the treatment of angina pectoris. It should be noted, however, that all of the patients apparently benefited by the drug experienced some toxic symptoms as indicated by plus (+) signs. These symptoms varied in severity from mild malaise and anorexia to nausea and vomiting. Several patients said that when they experienced such symptoms they decreased their physical activity. Some patients preferred to stay at home or rest in bed if the symptoms were severe. An attempt was made in every instance to use a dose of khellin that would be therapeutically effective yet not toxic enough to influence activity. Sometimes several weeks were necessary to make this adjustment and even on such a dose occasional mild anorexia or malaise was noted. Thus the effect of the medication on the total activity of the patients studied was unknown and not subject to complete control in the usual doses given. For this reason it could not be determined whether this apparent beneficial effect of khellin was due to a reduction in the patient's daily activity as a result of the side effects of the drug or due to a pharmacologic action upon the coronary circulation. Therefore evaluation of the preparation was sought by more objective methods.

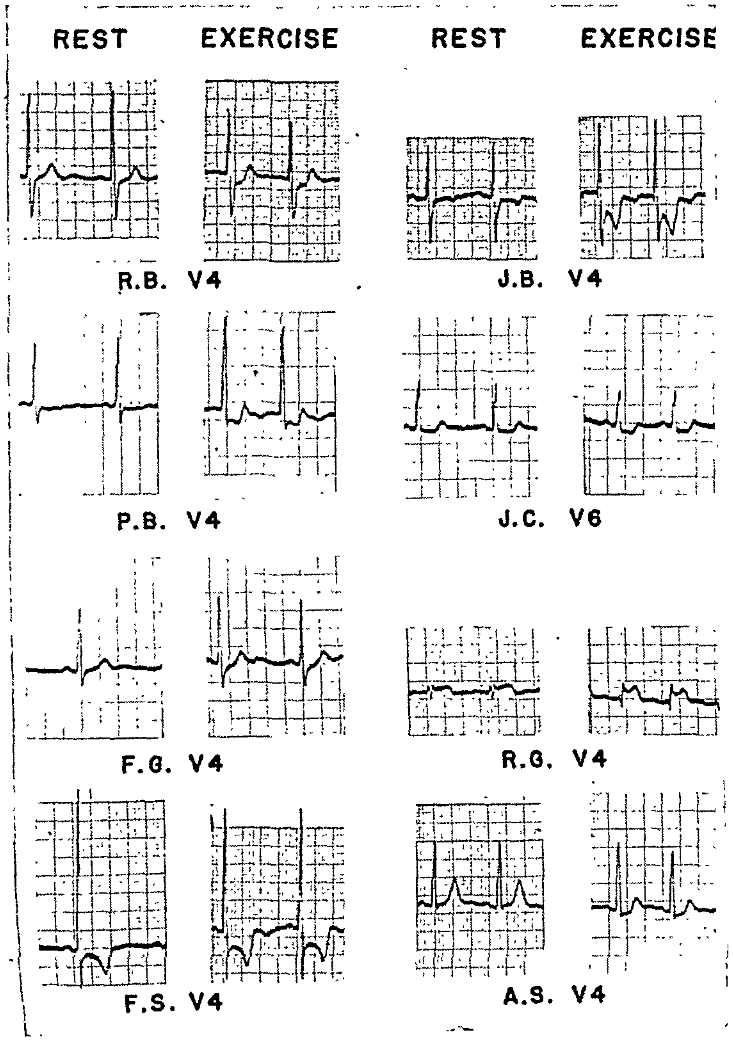


Fig. 1.—Control electrocardiographic changes occurring during exercise in patients who were given khellin parenterally.

At this point it may be expedient to describe briefly the toxic symptoms encountered with the oral administration of khellin. The principal symptoms noted are summarized in Table 1. The typical order of appearance is as follows: About 48 to 96 hours after starting the drug, the patient notices a disinclination to eat. This gradually progresses to complete anorexia and the appearance of mild nausea after meals. Vomiting and retching may occur if the drug is continued. Occasionally nonspecific symptoms may predominate. Weakness, fatigue, "sick all over," "lack of pep," "rum dum," and "woozy" are the usual terms employed by the patients. When the drug is stopped, the symptoms gradually subside and disappear in approximately 48 hours.

The smallest daily dose required to produce toxic symptoms varies widely among patients as indicated in Table 2. One patient had mild malaise and anorexia while taking one 50 mg. tablet of khellin every other day. This was carefully studied and verified by alternate periods of placebo administration when no toxic symptoms were noted. Two patients were able to take consistently 300 mg. daily without apparent toxic symptoms. These results are comparable to those obtained by other workers.[9]

There was some indication that higher daily doses of khellin could be tolerated when given intramuscularly than when given orally. For example, in one patient (P. B.) anorexia readily developed with an oral dose of 150 mg. per day, but there were no symptoms when the patient received 210 mg. a day intramuscularly. A second patient (R. B.), who always became nauseated when receiving 100 mg. of khellin daily by mouth, tolerated 175 mg. a day intramuscularly without symptoms. No systematic studies were made on this subject, however.

None of the toxic symptoms were serious. A potential danger, however, was encountered in one patient who had congestive failure and angina decubitus. After a careful control period of placebo administration, a dosage of 150 mg. of khellin given orally every day was started. Twenty-four hours later nausea and vomiting occurred accompanied by great psychic disturbance which resulted in an increase in severity and frequency of angina. The slow excretion of the drug became uncomfortably apparent in this instance.

In an effort to obtain a more objective appraisal of the effect of khellin upon the coronary circulation, eight patients were selected in whom graded exercise consistently produced chest pain accompanied by diagnostic alterations in the electrocardiogram. Exercise was performed using standard steps similar to those described by Master.[9a] Patients exercised at a constant rate, so that any increase in exercise capacity would be indicated by an increase in the number of trips the patient was able to make. After a control exercise period during which chest pain and electrocardiographic changes appeared, the patient was allowed to rest for 40 minutes after which the electrocardiogram returned to its preexercise appearance. A 1/150 grain (0.40 mg.) tablet of glyceryl trinitrate was then placed under the tongue and allowed to dissolve. Five minutes later exercise was performed in an identical manner. As illustrated in figure 3, every patient studied exhibited a significant increase in exercise capacity. On subsequent days, usually a week or more apart, the study was repeated using, instead of glyceryl trinitrate, single injections of khellin given deep into the gluteal muscles in doses varying from 50 to 150 mg. or intravenous injections in doses of from 30 to 60 mg. The injections alone did not produce a change in the electrocardiogram. Fifteen to 20 minutes were allowed to elapse after the intramuscular injections and 5 to 10 minutes after the intravenous injections before exercise was performed. The results of this study are indicated in figure 3. A consistent change in exercise capacity was not noted after either route of administration. One patient (F. S.) was able to perform more exercise after 75 mg. of khellin intramuscularly; but when the

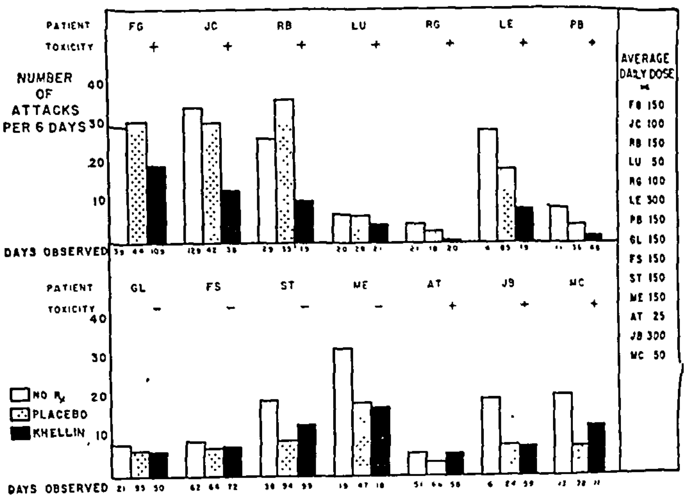


Fig. 2.—Effect of khellin given orally upon the frequency of angina in 14 patients studied by the "blind test" technique.

---

[9] Lipman, B. S., and Massie, E.: A Report on the Use of Khellin in Angina Pectoris, J. Lab. & Clin. Med. 36:956, 1950.

test was repeated using 100 mg. of khellin four months later, no increase in exercise capacity was noted. Two patients (F. G. and F. S.) showed somewhat less striking electrocardiographic changes on exercise following intramuscular administration of khellin compared to the control test, but exercise capacity was not increased nor pain intensity decreased. It was apparent that no beneficial effect of khellin upon induced angina had been demonstrated by the above method of study.

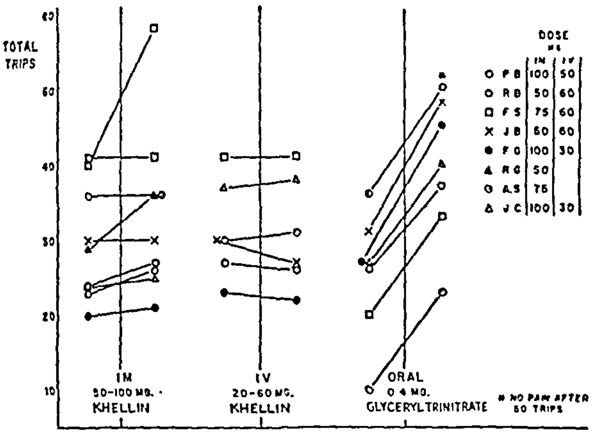


Fig. 3.—Effect of khellin given parenterally compared to glyceryl trinitrate given orally upon the exercise capacity of eight patients with angina pectoris. Control exercise capacity is indicated to the left of the vertical lines with exercise capacity after medication indicated to the right.

It is possible that khellin may not manifest its maximum pharmacologic effect until several hours or days after administration. This was suggested by the delay in appearance of toxic symptoms after starting the oral preparation. If khellin did act in this manner, another type of experiment would have to be devised in order to test its effect upon angina pectoris. Therefore the following plan was followed. Five patients were selected from the previously studied group of eight described above and hospitalized for periods of five to eight days. During this time they were allowed to remain ambulatory and continue normal activity so that enforced bed rest would not alter their exercise capacity. At the same time of day and under identical conditions, exercise tolerance tests as previously described were performed. This was continued for a control period of two to six days during which no medication was given. Khellin was then administered intramuscularly three times daily in dosages of 75 to 210 mg. per day. Exercise tests were repeated daily under identical conditions. As illustrated in figure 4, consistent improvement in exercise capacity was not noted despite daily dosages which, in two patients, were larger than the minimum daily oral toxic dose. No changes were noted in the appearance of the electrocardiogram during the period of khellin administration. The electrocardiographic changes occurring during exercise were not different from those obtained during the control period.

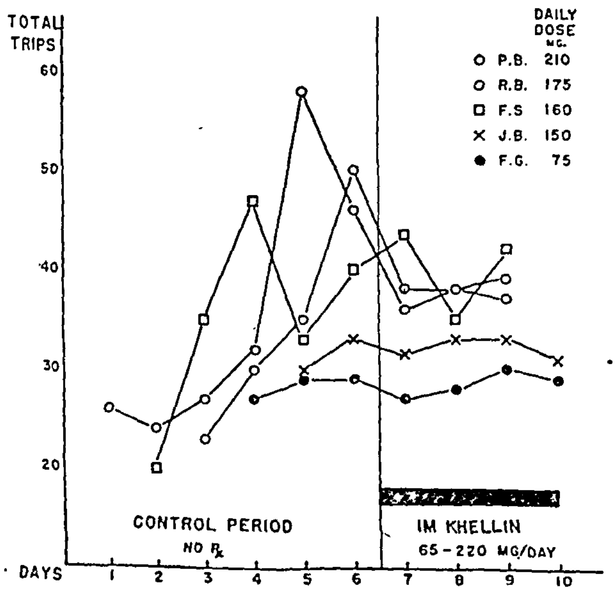


Fig. 4.—The effect of daily intramuscular administration of khellin upon the exercise capacity of five patients with angina pectoris.

The above data suggest that neither single parenteral doses of khellin nor daily maintenance doses given intramuscularly had any demonstrable effect in increasing the exercise capacity of patients with angina pectoris. The possibility remained that khellin may have some effect on other circulatory features such as cardiac output, systemic blood pressure, or pulmonary artery pressure which would favorably influence the course of angina. The possibility that some favorable effect could be produced upon pulmonary artery pressure was suggested by the prompt beneficial results reported in patients with bronchial asthma and cor pulmonale by one group of workers.[6h] To test this possibility, five patients were selected and studied carefully under basal conditions. Four patients had distinct alterations in various circulatory functions. One patient had a small interventricular septal defect but was essentially normal in all other respects. A brief summary of the important features of these cases appears at the end of this paper.

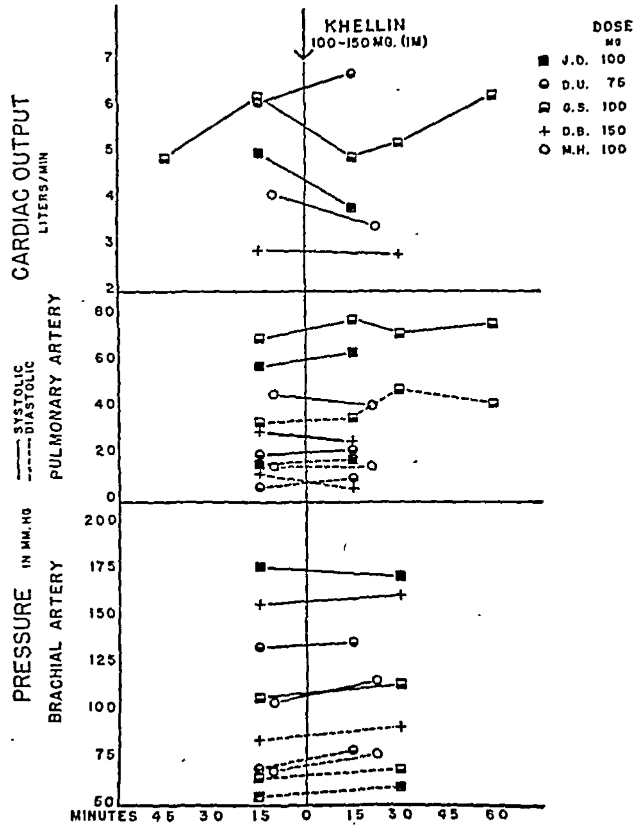


Fig. 5.—The effect of single intramuscular injections of khellin upon the circulation in five patients.

METHOD

Cardiac output was determined by the Fick principle. Mixed venous blood was obtained by means of a cardiac catheter with the tip located in the main pulmonary artery. Blood oxygen analyses were performed in a Van Slyke apparatus. Arterial blood samples were collected through a Cournand needle inserted into the brachial artery. Oxygen consumption was measured by collecting expired air in a Tissot apparatus and determining the oxygen and carbon dioxide content in a Henderson-

---

9a. Master, A. M., and Oppenheimer, E. T.: Simple Exercise Tolerance Test for Circulatory Efficiency with Standard Tables for Normal Individuals, Am. J. M. Sc. 177:223 (Feb.) 1929.

Haldane apparatus. Blood pressures were recorded optically by means of Hamilton manometers connected to the cardiac catheter or the inlying arterial needle. Control observations were made at ten to fifteen minute intervals prior to the administration of khellin as indicated in figure 5. A single intramuscular injection of 75 to 150 mg. of khellin was then given, and further observations were made as indicated.

RESULTS

No consistent significant changes in cardiac output or in pulmonary artery or brachial artery pressure were noted following khellin administration, despite resting deviations of these values from the normal range in four patients, due to disease. These patients had slight decreases in cardiac output, but in one patient this was not sustained. There appeared to be a very slight rise in systolic and diastolic arterial pressures in all cases. No toxic symptoms were experienced by the patients, except some local pain and tenderness at the injection site. These observations are in agreement with those made in a similar study by Zimmerman.[10]

At this point it may be advantageous to describe briefly the local discomfort produced by the parenteral administration of the particular preparations of khellin studied. Three-fourths of all patients receiving intramuscular injections complained of prompt deep burning or aching pain at the injection site lasting from 1 to 10 minutes after the injection and occasionally followed by a transient aromatic odor or bitter taste. Two patients given daily intramuscular injections of khellin in the hospital complained about the discomfort of the injections and stated that they would be unable to tolerate a prolonged course of therapy by this route. The concentration of only 50 mg. of khellin in 3 cc. of vehicle proved inconvenient when large daily doses of 300 mg. or more were given. Intravenous administration produced even more discomfort. In nearly every instance, prompt severe local burning pain appeared at the injection site as soon as administration began and traveled up the arm to the shoulder. This pain in several instances was quite intense and lasted from 2 to 10 minutes. No perivenous injections occurred, and no subsequent venous thromboses appeared. Clearly there is a need for more concentrated parenteral preparations which are free from these uncomfortable local reactions.

DISCUSSION

The difficulties of evaluating any therapeutic agent for a condition as variable and subjective as angina pectoris has been commented on by others.[11] Undoubtedly, the blind test technique [7] offers the best method of evaluation when one must depend for data on a record of the patient's symptoms. The effect of inert preparations in reducing the frequency of anginal attacks compared to control periods when no medication was given can be easily seen in figure 2. This has been noted by many others.[11] However, even this method of study has limitations. An adequate number of patients must, of course, be studied to be certain of a proper sample. It is important to continue the study for an adequate period of time, alternating the placebo and medication constantly to correct for temporal variations in the frequency of anginal attacks. Probably the most serious obstacle, however, in conducting a proper "blind test" program in the evaluation of oral khellin administration is the high incidence of toxic symptoms occurring often with doses of the drug which may be too small to have any physiologic effect upon the coronary circulation. The test, of course, fails to be a true "blind test" when the patient is aware of anorexia and nausea occurring with one box of tablets and absent with another. Equally important is the tendency, previously discussed, of patients to decrease their physical activity when experiencing toxic symptoms.

Most of these disadvantages can be eliminated by parenteral administration and by utilizing more objective means of study. The results obtained by such methods in this study indicate that khellin has strikingly little effect on angina pectoris induced by exercise and no effect upon other circulatory functions. Its continued clinical employment seems, therefore, of dubious value.

However, the possibility remains that the dosages employed have been too small to elicit the desired effects. Studies of blood levels of khellin are needed. Oral preparations allowing larger daily dosage with less toxicity and more concentrated parenteral preparations, which can be given without discomfort, may demonstrate more encouraging effects on the coronary circulation in man.

SUMMARY

1. Utilizing the "blind test" technique to evaluate the effect of oral khellin in a carefully selected group of 14 patients with angina pectoris induced by effort, it was found that 7 patients experienced a reduction in the frequency of their anginal attacks when compared to similar periods of placebo administration.

2. It could not be determined whether this reduction was related to a decrease in physical activity caused by toxic reactions to the drug or to an actual effect on the coronary circulation.

3. More objective methods of study utilizing exercise tolerance tests performed before and after parenteral administration of khellin and compared with glyceryl trinitrate (nitroglycerin) failed to reveal any beneficial effect in eight patients.

4. Daily intramuscular administration of khellin failed to improve the exercise capacity in five patients.

5. Intramuscular administration of 100 to 150 mg. of khellin failed to produce any effect upon cardiac output, pulmonary artery pressure, or systemic arterial pressure in five patients with various circulatory disorders.

6. The high incidence of systemic and local toxic reactions was discussed and its effect upon the data obtainable by the "blind test" method of study was pointed out.

7. On the basis of this study, further clinical use of khellin appears of doubtful value but studies at higher dosage levels are indicated.

APPENDIX: CLINICAL SUMMARIES OF PATIENTS STUDIED BY CARDIAC CATHETERIZATION

1. J. D. is a 71-year-old white bartender who had been unable to work because of dyspnea on exertion, orthopnea, and edema of the feet and legs for the past 12 years. During that time he had many attacks of wheezing and tightness in his chest, coming on usually at night and relieved by aminophylline suppositories or inhaling fumes of stramonium and belladonna powder. Digitoxin, mercurial diuretics, and a low salt diet were administered in the outpatient clinic. Physical examination revealed an elderly, dyspneic man with a blood pressure of 170/90. The thorax was emphysematous, and numerous moist rales and expiratory wheezes were present throughout the chest. A grade 2 systolic murmur was heard at the apex. There was mild edema of the ankles. The hemoglobin was 11 gm., and urinalysis revealed a trace of protein. The vital capacity was 1.6 liters, and the arm to tongue circulation time (using sodium dehydrocholate) was 30 seconds. The electrocardiogram revealed left bundle branch block with auricular fibrillation and complete auriculoventricular block. Roentgenograms revealed generalized cardiac enlargement with minimal pulmonary congestion. Arterial oxygen saturation was 89%. The clinical diagnosis was arteriosclerotic heart disease and cor pulmonale secondary to chronic bronchial asthma.

2. D. U. is a 45-year-old white housewife who had progressively severe dyspnea on exertion accompanied by frequent bouts of chills and fever for the past three years. Dyspnea had been so severe during the past six months that she had been confined to bed. Careful studies for tubercle bacilli were negative. Examination revealed a thin, weak, dyspneic woman whose blood pressure was 118/72. Respiration was rapid and accompanied by numerous inspiratory wheezes and rales over both lung fields. There was no clubbing of the digits. The hemoglobin was 14.8 gm., and the urine was normal. Vital capacity was 500 cc. The electrocardiogram revealed right axis deviation. Roentgenograms of the chest revealed diffuse pulmonary infiltration and fibrosis. Arterial oxygen saturation after mild exercise was 84%. The clinical diagnosis was pulmonary fibrosis and infiltration of unknown etiology and possible cor pulmonale.

---

10. Cash, H., and Zimmerman, H.: A Study by Means of Intracardiac Catheterization of the Effect of Khellin on Cardiac Output and the Pulmonary Circulation in Man, Am. J. Med. **10**: 515 (April) 1951.

11. Evans, W., and Hoyle, C.: Comparative Value of Drugs Used in Continuous Treatment of Angina Pectoris, Quart. J. Med. **2**: 311 (July) 1933. Gold, H. (New York); Kwit, N. T., and Otto, H.: Xanthines (Theobromine and Aminophylline) in Treatment of Cardiac Pain, J. A. M. A. **108**: 2173 (June 26) 1937.

3. G. S. is a 46-year-old white truck driver who had chronic bronchial asthma with progressive impairment of activity since the age of 13. He had no symptoms of heart failure. Physical examination revealed a middle-aged man who was slightly cyanotic. Numerous expiratory wheezes were heard throughout the chest, which had an emphysematous contour. The heart was not remarkable. Blood pressure was 115/85; hemoglobin, 17.5 gm., and the urine, normal. The vital capacity was 1.5 liters and after epinephrine was administered increased to 2.5 liters. The electrocardiogram revealed a slight right axis deviation and abnormal T waves. The roentgenogram revealed emphysematous changes and enlargement of the right ventricle and pulmonary artery. The arterial oxygen saturation was 74%. The clinical diagnosis was cor pulmonale secondary to chronic bronchial asthma.

4. D. B. is a 27-year-old white carpenter who was found to have a heart murmur in a routine examination two years ago. He has had no symptoms. Physical examination revealed a well muscled male with a blood pressure of 120/70. A grade 4 systolic murmur accompanied by a palpable thrill was heard in the fourth interspace along the left sternal border. There was no clubbing or cyanosis. The blood cell count, urinalysis, electrocardiogram, and chest roentgenogram were within normal limits. The clinical diagnosis was congenital heart disease with an interventricular septal defect. The diagnosis was confirmed by cardiac catheterization.

5. M. H. is a 47-year-old housewife who has had a heart murmur for the past 20 years. Fifteen years ago she developed dyspnea on exertion and was found to have mitral stenosis. Her symptoms have progressed so that she now can do her housework only with great difficulty and she has had numerous episodes of pulmonary edema. Examination revealed a thin woman with a loud second pulmonic sound and a prominent apical diastolic rumbling murmur. There was no edema. The blood pressure was 120/80. The electrocardiogram revealed a sinus rhythm with abnormal T waves. X-ray examination revealed right ventricular enlargement, pulmonary congestion, and fulness of the left auricle. She was considered suitable for a "finger-fracture" of the stenotic mitral valve and was scheduled for surgery.

The following preparations of khellin, supplied by The Physicians' Drug and Supply Company of Philadelphia, were used in this study: tablets containing 50 mg. of khellin for oral use; ampules containing 50 mg. of khellin in olive oil and ethyl acetate for intramuscular use; and ampules containing 30 mg. of khellin in a 40% solution of sodium benzoate for intravenous use. These preparations contain only pure khellin as determined by spectrophotometric analysis and melting point determination and are not mixtures with other material.

ADDENDUM

Since this article was submitted for publication the following significant paper has been published: Silber, E. N.; Snider, G. L.; Goldberg, H.; Katz, L. N., and Radner, D. B.: The Effect of Khellin on Cardio-Pulmonary Function in Chronic Pulmonary Disease (*J. Clin. Invest.* **30**:1046 [Oct.] 1951).

Emotions in Dermatology.—Every thinking dermatologist has recognized that emotional factors play a great part in the development and in the course of certain skin diseases. . . . But . . . there is a regrettable tendency to blame them indiscriminately. . . . In many dermatoses ignorance of the cause has led to the psyche being blamed. I prefer to regard a psychogenic explanation as the last resort of the diagnostically destitute. The usual approach is to analyze a series of cases and state that a certain percentage suffered from maladjustments, such as lack of parental love, broken homes, poverty, and so on. But it is remarkable how rarely the frequency of such maladjustments is compared with their frequency in comparable samples of normal persons. . . . Even where such normal controls have been investigated psychologically, it is reasonable to doubt whether the same enthusiasm has been shown in "digging up the dirt" as in those cases being investigated with the avowed object of demonstrating psychosomatic factors.—L. J. A. Loewenthal, M.D., Obsolescent and Debatable Ideas of Dermatology, *South African Medical Journal*, Nov. 17, 1951.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

The Council on Physical Medicine and Rehabilitation has authorized publication of the following article.

Ralph E. De Forest, M.D., *Secretary.*

AN APPRECIATION

The Council on Physical Medicine and Rehabilitation expresses its appreciation of the services of the following consultants who so freely gave their assistance in the work of the Council during the year 1951: Dr. Thomas D. Allen, Mr. Robert W. Benson, Drs. Lester Blum, Rowine H. Brown, Raymond Carhart, Mrs. Eva Thompson Carson, Drs. Milton B. Cole, G. de Takats, Donald J. Erickson, Clarence J. Gamble, Aram Glorig, Archer S. Gordon, Stacy R. Guild, John S. Hibben, Howard P. House, John Huffman, I. F. Hummon, Ernest E. Irons, Mary Karp, A. B. C. Knudson, M. M. Kunde, Ludwig G. Lederer, Alfred Lewy, Raymond W. McNealy, A. M. MacKay, Gordon M. Martin, C. O. Molander, Lester A. Nalefski, Louis B. Newman, Benjamin H. Orndoff, Stafford L. Osborne, Mr. H. W. Pavela, Drs. L. W. Peterson, Henry G. Poncher, Gerald H. Pratt, James W. Rae, Mr. Luther G. Ramer, Drs. Herbert Rattner, John Reichert, Joseph E. Remlinger, Arthur A. Rodriquez, Robert S. Schwab, Steven O. Schwartz, S. Richard Silverman, O. E. Van Alyea, H. O. Wernicke, Douglas E. Wheeler, and Jessie Wright.

The following have rendered valuable services as members of Advisory Committees:

American Health Resorts.—Drs. F. A. Hellebrandt, M. B. Jarman, Walter S. McClellan, and Euclid M. Smith.

Artificial Limbs.—Drs. Rufus H. Alldredge, Henry H. Kessler, Paul E. Klopsteg, Messrs. J. B. Korrady and Lucius Trautman.

Audiometers and Hearing Aids.—Drs. Gordon Berry, Richard K. Cook, Hallowell Davis, Kenneth M. Day, Edmund P. Fowler, Isaac H. Jones, Dean M. Lierle, Moses H. Lurie, Douglas Macfarlan, and C. Stewart Nash.

Clinical Thermometry.—Drs. Eugene Du Bois, Steven M. Horvath, John Talbott, and R. E. Wilson.

Devices for Fertility and Infertility.—Drs. William J. Dieckmann, Wm. W. Greulich, Walter J. Meek, Pendleton Tompkins, and Mr. R. R. Olin.

Education.—Drs. Frances Baker, Robert L. Bennett, Jr., Ben L. Boynton, Earl C. Elkins, Robert W. Johnson, Jr., H. Worley Kendell, M. E. Knapp, Sedgwick Mead, Fred B. Moor, William H. Northway, Winfred Overholser, Donald L. Rose, William H. Schmidt, Walter M. Solomon, William D. Stroud, George D. Wilson, and Charles S. Wise.

Electrocardiographs.—Drs. Howard B. Burchell, George Fahr, Harold Feil, Harold E. B. Pardee, William D. Stroud, and Carl J. Wiggers.

Electroencephalography.—Drs. Percival Bailey, Edward J. Baldes, Hallowell Davis, Frederic A. Gibbs, Franc D. Ingraham, and Herbert H. Jasper.

Ionizing Radiations.—Drs. W. Edward Chamberlain, Arthur C. Christie, Kenneth S. Cole, L. F. Curtiss, Edwin C. Ernst, Hymer L. Friedell, Robert R. Newell, Eugene P. Pendergrass, U. V. Portmann, Edith H. Quimby, Lauriston S. Taylor, Stafford L. Warren, and J. L. Weatherwax.

Ophthalmic Devices.—Drs. David G. Cogan, William F. Hughes, Jr., William C. Owens, Richard G. Scobee, and Kenneth C. Swan.

Respirators.—Drs. Edward L. Compere, William T. Green, Warren E. Wheeler, James L. Whittenberger, and James L. Wilson.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . "Medic, Chicago"

CROSS RESISTANCE TO ANTIBIOTICS

The increased microbial resistance that frequently follows exposure to an antibiotic has generally been considered to be characteristic of the antibiotic itself and not to entail increased resistance to other antibiotics. This viewpoint has been challenged recently by a number of investigators, whose studies have yielded information that may prove of considerable clinical importance and experimental interest.

Preliminary observations [1] indicated that acquired resistance to terramycin was accompanied by decreased sensitivity to aureomycin and that acquired resistance to aureomycin or to chloramphenicol was accompanied by cross resistance to the other agent and to terramycin. Since then, several extensive studies on cross resistance among antibiotics have been reported. Kaipainen [2] from e department of serology and bacteriology of the Unirsity of Helsinki cultured 27 different bacterial strains in increasing concentrations of aureomycin, chloramphenicol, terramycin, dihydrostreptomycin, and penicillin. After the resistance of the bacteria to the primary antibiotic was increased, simultaneous changes in sensitivity to the other antibiotics were determined. Organisms developing resistance to aureomycin, chloramphenicol, or terramycin in general showed a simultaneous increased resistance to the other two antibiotics, cross resistance between aureomycin and terramycin being most commonly encountered.

There was no indication of cross resistance between aureomycin, chloramphenicol, and terramycin on one hand and dihydrostreptomycin on the other; in fact, organisms resistant to one or more of the broad spectrum antibiotics often seemed to have acquired increased sensitivity to streptomycin and vice versa. No cross resistance was noted between any of these four antibiotics and penicillin.

Gezon and Fasan [3] from the department of pediatrics of the University of Chicago induced resistance to streptomycin, neomycin, chloramphenicol, aureomycin, and terramycin in each of seven group A β-hemolytic streptococci by serial plate transfer. Cross resistance was noted between terramycin and aureomycin and to a lesser extent between streptomycin and neomycin. Chloramphenicol resistant organisms were as sensitive as their parent strains to each of the other four antibiotics, and no cross resistance was noted between terramycin and aureomycin on one hand and neomycin and streptomycin on the other.

Monnier and Schoenbach [4] of the department of preventive medicine, the Johns Hopkins University School of Medicine, and of the State University Medical Center at New York, respectively, studied the development of resistance in 12 strains of pathogenic organisms following serial transfer in media containing one of a number of antibiotics, i. e., penicillin, aureomycin, chloramphenicol, terramycin, and streptomycin. After the organisms were exposed to one antibiotic, their sensitivity to the other four and to polymyxin D was determined. Organisms which became resistant to terramycin, aureomycin, or chloramphenicol often showed a cross resistance to the other two antibiotics but never showed cross resistance to penicillin or to streptomycin. Similarly, organisms resistant to streptomycin or to penicillin did not show cross resistance to aureomycin, terramycin, or chloramphenicol. No significant change in sensitivity to polymyxin D was noted in the various resistant microorganisms.

Gocke and Finland [5] of the department of medicine of Harvard Medical School repeatedly subcultured 14 strains of aerobic human pathogens on media containing increasing concentrations of aureomycin, terramycin, chloramphenicol, or neomycin. The organisms that developed resistance to neomycin did not show cross resistance to any of the other three antibiotics, and, in fact, increased sensitivity was sometimes noted. Conversely, organisms that had developed resistance to one of the other three antibiotics did not show cross resistance to neomycin. Almost all the neomycin resistant organisms, however, showed considerably greater resistance to streptomycin than did the corresponding control strains. Aureomycin and terramycin showed the development of mutual cross resistance most clearly and regularly. Following exposure to chloramphenicol some strains showed increased resistance to aureomycin and/or terramycin, while others did not. Conversely, some but not all strains rendered resistant to either aureomycin or terramycin also displayed significantly increased resistance to chloramphenicol. None of the organisms showed a change in sensitivity to penicillin following repeated exposures to aureomycin, terramycin, chloramphenicol, or neomycin.

These reports present convincing proof that bacteria rendered resistant in vitro may exhibit cross resistance to one or more other antibiotics. This information may help in elucidating the mode of action of antibiotics. Thus, if the antimicrobial action of antibiotics is due to an interference with one or more of the bacterial enzyme systems, those agents that show cross resistance may exert their action along common pathways. In addition, some evidence has been presented that indicates that cross resistance to antibiotics may develop during therapy,[6] though in such studies it is not easy to rule out superinfection with resistant strains. Should the effects noted in vitro also obtain in vivo, the possibility of developing cross resistance, with subsequent lessening of the efficiency of antibiotic therapy, should be a deterrent to the indiscriminate use of antibiotics, particularly those that readily give rise to resistance.

---

[1] Fusillo, M. H., and Romansky, M. J.: The Simultaneous Increase in Resistance of Bacteria to Aureomycin and Terramycin upon Exposure to Either Antibiotic, Antibiotics & Chemother. **1**: 107 (May) 1951. Herrell, W. E.; Heilman, F. R., and Wellman, W. E.: Some Bacteriologic Pharma-
Cl. [illegible]ogic, and Clinical Observations on Terramycin, Ann. New York Acad.
syn. [illegible]: 448 (Sept. 15) 1950. Pansy, F. E.; Khan, P.; Pagano, J. F., and
Mo[illegible] R.: The Relationship Between Aureomycin, Chloramphenicol,
administ[illegible] Proc. Soc. Exper. Biol. & Med. **75**: 618 (Nov.) 1950.
The results [illegible] W. [illegible] Relationship of Bacteria to Streptomycin, Ann.
[illegible] biol. F[illegible]ae (supp. 1) **29**: 15, 1951.
[illegible] M., an[illegible]san, D. M.: Cross Resistance of Streptococci
10. Cash, H., [illegible]ces An[illegible]ics, Science **114**: 422 (Oct. 19) 1951.
Catheterization [illegible], and [illegible]nbach, E. B.: The Resultant Sensitivity of
Pulmonary Circu. [illegible] Various A[illegible]biotics After Induced Resistance to Each
11. Evans, W., [illegible] Antibiotics [illegible] Chemother. **1**: 472 (Oct.) 1951.
Continuous Treatn. [illegible] and Finl[illegible] M.: Cross-Resistance to Antibiotics:
1933. Gold, H. (New [illegible] Exposure of Bacteria to Aureomycin, Terramycin,
bromine and Aminop. [illegible] Neomycin on the Resistance to All of These Anti-
108: 2173 (June 26) 1[illegible] mycin and Penicillin, J. Lab. & Clin. Med. **38**: 719

THE PHYSICIAN'S RESPONSIBILITY

Dr. A. M. Phillips, president of the Medical Association of Georgia, delivered before the annual session of that association an address[1] of importance to every member of the medical profession. Dr. Phillips urged each member of the profession to take inventory of his rights, which in recent years have often been in need of defense, and of his responsibilities to himself, to his patients, to his profession, and to society. He warns that this is an urgent matter. The threatened breakdown, in some areas, of the sympathetic relationship between patient and physician, the insidious encroachment of government in the field of medicine, and the crisis in international affairs demand immediate and serious attention.

The physician's primary obligation, Dr. Phillips points out, is to his patients. To them, time, patience, and undivided attention must be given ungrudgingly—time to explore the diagnostic and therapeutic possibilities thoroughly, patience to explain the general nature of the disorder and its treatment, and attention that arises from a genuine interest in a fellow human being and his problems. Without these things there can be only the assembly line type of practice so greatly deplored elsewhere. In addition, Dr. Phillips points out, we as physicians owe it to our patients "to keep our skill at its peak by practicing in our own expenditure of physical and mental energy, the moderation which we preach to them, and by utilizing the cultural and spiritual resources afforded by wholesome recreation, reading, home life and worship." It is also the physician's duty to his patients to keep abreast of current developments in diagnosis and therapy through regular reading of medical journals and participation in postgraduate educational programs.

Closely related are a physician's responsibilities to his colleagues. To them and to his patients he has an obligation to contribute to medical knowledge. The complacent practice of "cook book" medicine is not enough. In every practice there is the opportunity to make and record careful observations from which significant conclusions can be drawn. Many of the important advances in medicine have been made by busy practitioners. Another duty of physicians, clearly recognized since the time of Hippocrates, is that of interesting themselves in the education of each new generation of doctors, and of maintaining and improving the standards of both premedical and medical education. The profession must make sure that its schools train more than competent technicians. The physician of today must be able to think logically and intelligently in many fields and should have the broadened sympathies that come with an appreciation of music, art, and literatu rticul is it important that medical schools be kept free from political control, with its potentiality for lowering educational standards and restricting freedom of scientific investigation.

To accomplish these things, members must work together in their medical societies. Only by active participation of all members, however, can these societies be kept democratic. There is no excuse for the allegation that the official policy of these organizations is dictated by a few. The county and state societies and the American Medical Association are governed by elected officials who are subject to the will of the majority. If this will is not made known, the majority has only itself to blame. Once policy is determined, it is the duty of the members to interpret it to patients. Unless they understand medicine's viewpoint, they cannot be expected to sympathize with it, and without such good will medicine cannot be practiced as effectively as it should be. To patients, each physician really is the medical profession, and the most valuable public relations man in the profession is the individual doctor whose genuine affection for, and service to, his patients make of them loyal allies and supporters. Finally, Dr. Phillips points to the current international crisis and the urgent national problems, which threaten the democratic way of life and demand that each physician fulfill his obligations as a citizen. It is his duty to be informed on current issues, to decide what he believes to be right, and to fight for his beliefs. As Dr. Phillips states, "The luxury of neutrality . . . is no longer possible even for physicians."

IMPROBABILITY OF EXTRANEURAL POLIOMYELITIS

The successful cultivation of poliomyelitis virus in suspensions of cells from various tissues or organs, such as skin, muscle, intestine, kidney, or testis, has been taken as proof that the virus is not necessarily neurocytotropic in the intact animal body. This conclusion is challenged by Faber[1] of Stanford University, based on technical errors in the in vitro cultivation technique.

The cells have always been repeatedly washed in saline solution, so that all normal inhibiting serum components are removed and so that many intracellular inhibiting factors are removed or denatured. The added nutrient medium has always been ox serum ultrafiltrate, which is free from normal inhibiting colloids.

There is abundant evidence that neurocytotropism and axonal conduction of the virus takes place in the intact animal. Clinical evidence does not support the belief that other tissues are capable of supporting the virus, since dermatitis, enteritis, nephritis, and orchitis are not clinical features of the disease. All of Faber's attempts to prove multiplication of the virus in the intestinal mucosa of monkeys have led to negative results. He concludes that the theory of extraneural affinities remains without factual proof and only serves to cloud the pathogenesis of the disease.

---

[6] Kaipainen.[2] Bergersen, F.: A Cross-Reaction in Resistance to Antibiotics, Nature **167**: 995 (June 16) 1951.

[1] Phillips, A. M.: The Physician's Responsibility, J. M. A. Georgia **40**: 157 (April) 1951.

[1] Faber, H. K.: The Question of Extraneural Growth of Poliomyelitis Virus, Science **114**: 570 (Nov. 30) 1951.

ORGANIZATION SECTION

COMMITTEE ON LEGISLATION

At its meeting in Los Angeles on Dec. 4, 1951, the Committee on Legislation of the American Medical Association recommended approval or disapproval of 21 different legislative proposals. All of the recommendations of the Committee were accepted by the Board of Trustees on Dec. 6, 1951. Following is a brief résumé of the measures proposed by the 82nd Congress and considered by the Committee, with the position of the Association in each instance.

C. Joseph Stetler, *Secretary*
Committee on Legislation

S. 1848

Introduced by Senator Frear of Delaware and referred to the Senate Committee on Banking and Currency.

Digest of Bill.—The bill would provide federal indemnity to institutions and individuals suffering property loss or personal injury as a result of enemy attack. The proposal would provide, among other things: (*a*) rehabilitation of community facilities and industrial activities (including hospital, medical schools, clinics, and other health facilities), and (*b*) federal medical care for civilians in attacked areas.

Association Position.—The Association opposes this bill because of (1) lack of agreement between federal agencies as to the purpose and mechanism of the measure, (2) lack of any urgency for legislation at this time to implement the type of program proposed by the bill, and (3) the huge cost of the program and the fact that its enactment would necessitate the establishment of one or more new federal agencies.

S. 1874

Introduced by Senator Murray of Montana and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would charge the Public Health Service with responsibility for (*a*) disseminating pertinent facts concerning leprosy; (*b*) advising and cooperating with other government and private agencies in this field; (*c*) studying and investigating conditions, problems and needs in this field; and (*d*) providing treatment in existing federal and state facilities or in new facilities or paying for necessary private medical care.

Programs would be authorized for research, rehabilitation, and reemployment of leprosy patients, for financial assistance to patients and their dependents, and for compensation for disability.

Association Position.—The Association opposes this bill because of the lack of a demonstrated need for federal legislation in this field.

S. 1875

Introduced by Senator Humphrey of Minnesota and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would authorize federal assistance to voluntary, nonprofit associations to secure facilities and equipment through long-term interest bearing loans for the purpose of operating health insurance plans. The Surgeon General of the United States Public Health Service would formulate standards for the making of loans, the determining of eligibility of organizations, the amount of loans, amortization, and determining priority for making loans.

Association Position.—The Association opposes this bill because the legislation would federalize certain functions that can and should be planned for and operated on a local level.

S. 2171

Introduced by Senator Hill of Alabama and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would provide federal aid for prepayment plans for hospital and medical care for the purpose of furnishing such benefits to persons unable to pay premiums and would provide federal funds to pay for a state survey of (*a*) needs for necessary diagnostic facilities; (*b*) mental, tuberculosis, and chronic disease facilities; (*c*) the shortage of physicians, and (*d*) extent of enrollment in voluntary prepayment health insurance plans.

Association Position.—The Association opposes this bill for the same reason as indicated under S. 1875, above.

S. 2246

Introduced by Senator Lehman of New York and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would amend the Public Health Service Act to enable the Surgeon General to provide monetary grants to states and other local political subdivisions to establish and maintain additional public health services for the detection, treatment, and study of chronic diseases.

Association Position.—The Association opposes this bill because (1) its provisions can, in a large measure, be carried on by existing facilities and (2) no provision is made in the legislation for determining the financial status of the patient.

S. 2247

Introduced by Senator Lehman of New York and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would amend the Public Health Service Act to enable the Surgeon General to provide monetary grants to states and other local political subdivisions to maintain outpatient services in hospitals and health centers for the detection and treatment of disease. The bill would also subsidize home care service and community planning for the ambulatory sick as well as for demonstrations and the training of personnel.

Association Position.—The Association opposes this bill because in effect it authorizes the practice of medicine by hospitals. The Committee did, however, refer the bill to the Council on Medical Service for further study and report.

S. 2248

Introduced by Senator Lehman of New York and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would authorize the Surgeon General to make secured loans for the purchase, construction, remodeling, maintenance, and operation of clinics or other facilities for diagnostic or diagnostic and curative services.

Loans would be made to (*a*) groups of physicians or physicians and dentists licensed under state laws and (*b*) medical schools, teaching hospitals, or other nonprofit public or private organizations.

Association Position.—The Association opposes this bill because the conditions under which loans would be made would unduly hamper the rendering of medical service and the freedom of the individual physician as to types of treatment, fees, etc. The bill would also condone the corporate practice of medicine.

S. 2301

Introduced by Senator Ives of New York (and seven other senators) and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would amend various existing laws for the stated purpose of providing federal assistance for nursing education. The bill would authorize the Public Health Service to administer four new types of benefits: (*a*) annual payments for the cost of nursing instruction, (*b*) grants for constructing and equipping new nursing schools, (*c*) nursing scholarships, and (*d*) federal subsidization of special projects and recruitment in the field of nursing. The bill also provides for grants to states to assist in the establishment and maintenance of plans for practical nurse training.

Association Position.—The Association opposes this bill because it would authorize federal intervention in the field of education and would permit continuing federal support for a program that is a local responsibility. In addition, the bill would place unwarranted administrative authority in the Federal Security Agency.

S. 2325

Introduced by Senator Humphrey of Minnesota and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would create, within the Department of Labor, a Bureau of Accident Prevention, for the purpose of (*a*) conducting inquiries and investigations into conditions of employment in interstate and foreign industry, (*b*) developing standards of operation and measures for the protection and general well-being of employees, and (*c*) promoting the acceptance of standards developed by the bureau, by employers, and employees.

The bill would also create an Accident Prevention Board for each industry, authorized to promulgate rules and regulations for the elimination of unsafe and unhealthful conditions after conducting public hearings in accordance with the Administrative Procedure Act.

Association Position.—The Association opposes this bill because (1) the need is not demonstrated and (2) the problem can be solved at the state level.

S. 2337

Introduced by Senator Lehman of New York and referred to the Senate Committee on Labor and Public Welfare.

Digest of Bill.—The bill would establish two types of programs: (1) an emergency maternal and infant care program for wives and children under 5 years of age of enlisted personnel of the armed forces, and (2) a program of hospital care for any dependent of enlisted personnel of the armed forces. These programs would be financed by the federal government and the states on a 50-50 basis.

Association Position.—The Association opposes this bill because of a report by the Council on Medical Service that the Council in its surveys has not found any evidence of a widespread need that would warrant the creation of a federal program and has agreed, therefore, that with proper planning the persons that do need assistance can be cared for by local agencies without federal intervention.

H. R. 4405

Introduced by Representative Clemente of New York and referred to the House of Representatives Ways and Means Committee.

Digest of Bill.—The bill would authorize the deduction of medical and dental expenses from gross income for income tax purposes. The term "medical expenses" is defined by the bill to include "amounts paid for the diagnosis, cure, mitigation, treatment or prevention of diseases or for the purpose of affecting any structure or function of the body (including amounts paid for accident or health insurance)." Such medical expenses incurred by the taxpayer, his spouse, or his dependents would be deductible.

Association Position.—The Association approves the bill because it would afford individual relief in cases of extremely high medical expenses and would also be an incentive to buy voluntary insurance.

H. R. 4519

Introduced by Representative Baring of Nevada and referred to the House of Representatives District of Columbia Committee.

Digest of Bill.—The bill would make unlawful any experimentation or operation in the District of Columbia on any living dog or cat for any purposes other than healing, curing, or sterilizing. The bill provides a fine or imprisonment or both for violations.

Association Position.—The Association opposes the bill because if enacted it would hamper proper medical research.

H. R. 4549 (identical bills: H. R. 4569, H. R. 4577, and H. R. 4579)

Introduced by Representative Clemente of New York and referred to the House of Representatives Committee on Interstate and Foreign Commerce.

Digest of Bills.—The bills would authorize the Federal Security Administrator to remodel the Ellis Island Marine Hospital at Ellis Island, N. Y., to treat juvenile drug addicts under the supervision of the Surgeon General of the Public Health Service.

Any person under 21 years of age known to use any narcotic drug or derivative thereof without medical supervision or direction would be eligible for admission on application by himself or his parents or upon recommendation of state or city correctional officers.

Association Position.—The Association opposes the bills because it is believed that problems presented by the juvenile drug addict are, for the most part, confined to the large metropolitan areas and should be taken care of, wherever possible, on a local basis. The Committee felt that if necessary the existing facilities (Ft. Worth, Texas, and Lexington, Ky.) should be utilized and if found inadequate they should be expanded.

H. R. 4723

Introduced by Representative Donohue of Massachusetts and referred to the House of Representatives Committee on Veterans Affairs.

Digest of Bill.—The bill would establish a rebuttable presumption of a service-connected disability for persons serving during World War II for psychoses developing a 10% or more degree of disability within five years after separation from active service.

Association Position.—The Association opposes the bill because it represents another effort to further liberalize existing Veterans Administration regulations regarding the presumption of service connection.

H. R. 4912

Introduced by Representative Perkins of Kentucky and referred to the House of Representatives Committee on Education and Labor.

Digest of Bill.—The bill would establish the Federal Agency for Handicapped, to provide various types of rehabilitative services to persons physically or mentally handicapped.

The agency would absorb the functions of the Office of Vocational Rehabilitation; the Division of the Physically Handicapped in the Bureau of Labor Statistics; the functions of the Library of Congress in furnishing aid for the blind; and the functions of the Federal Security Agency with respect to the Vocational Rehabilitation Act and state grants for aid to the blind. The new agency also would coordinate all other rehabilitative measures for the benefit of handicapped persons, administered by other agencies of the government.

Association Position.—The bill was referred to the Joint Committee of the Council on Industrial Health and the Council on Physical Medicine and Rehabilitation for study and report. However, if hearings are scheduled before a report is received H. R. 4912 will be opposed because it would: (1) create a department for a small segment of the field of medicine which would be taken care of if a Department of Health was created; (2) result in overlapping of services, and (3) mean an unnecessary expenditure of funds.

H. R. 5197 (identical Bill: H. R. 5200)

Introduced by Representative Corbett of Pennsylvania and referred to the House of Representatives Committee on Veterans Affairs.

Digest of Bills.—The bills would establish a rebuttable presumption of service connection for poliomyelitis developing a 10% or more degree of disability within five years after separation from active service by World War II veterans who were prisoners of war.

Association Position.—The Association opposes the bill for the reason indicated under H. R. 4723, above.

H. R. 5414 (identical bill: H. R. 5795)

Introduced by Representative Tollefson of Washington and referred to the House of Representatives Committee on Interstate and Foreign Commerce.

Digest of Bills.—The bills would authorize the establishment of a Multiple Sclerosis Institute in the Public Health Service and would authorize and charge the Surgeon General with responsibility for extensive research, investigation, experiments, and dissemination of information regarding multiple sclerosis. This work would be carried on through the use of federal funds in such forms as grants-in-aid, fellowships, and scholarships.

Association Position.—The Association opposes the bills because there are already existing agencies under the direction of the Surgeon General of the United States Public Health Service which could carry on such a program.

H. R. 5426

Introduced by Representative Brooks of Louisiana and referred to the House of Representatives Committee on Armed Services.

Digest of Bill.—The bill would create three major divisions of the reserve components, the ready reserve, the standby reserve, and the retired reserve. Actually, all three are available in case of a national emergency declared by Congress, but the classifications will clarify the exact status of reservists.

In addition to clarifying the status of reservists, the bill would provide for increased and more efficient reserve training.

Association Position.—The Association has no objection to vorable consideration of the bill, since it would clarify the erve structure of the armed forces and would provide for a ore effective reserve training program.

H. R. 5718

Introduced by Representative Roberts of Alabama and referred to the House of Representatives Committee on Interstate and Foreign Commerce.

Digest of Bill.—This bill, which is similar in purpose to H. R. 3298, the drug bill enacted during the first session of the 82d Congress, would (*a*) define prescription drugs by statute, (*b*) permit druggists to fill oral prescriptions for drugs, and (*c*) permit wider latitude in refilling prescriptions for nondangerous drugs.

The bill would, in addition, establish the National Drug Commission, which would be responsible for classifying prescription-only and over-the-counter drugs.

Association Position.—The Association opposes the bill because it would authorize a new federal agency to decide which drugs must be sold only on prescription and which must be labeled for "over-the-counter" sale.

H. R. 5853

Introduced by Representative Priest of Tennessee and referred to the House of Representatives Committee on Interstate and Foreign Commerce.

Digest of Bill.—The bill would authorize federal grants to states on a 50-50 basis to help finance health and safety instruction and physical education for children of school age. It should be noted that the bill is silent as to which federal agency would approve state plans or administer the measure, if adopted. The word "commissioner" is used throughout the bill; however, the term is not defined.

Association Position.—The Association opposes the bill because it (1) deals with a state and local problem, (2) provides for an unnecessary expenditure of funds, and (3) contains many technical errors.

S. J. Res. 110

Introduced by Senator Murray of Montana and referred to the Senate Committee on Labor and Public Welfare.

Digest of Resolution.—The resolution would authorize the Surgeon General of the Public Health Service and the Secretary of the Interior to conduct research, investigation, experiments, and demonstrations into the causes, effects, and means of prevention and control of air pollution. The Surgeon General and the Secretary of the Interior could seek the assistance of other federal, state, and local as well as public and private agencies and bodies concerned with the problem.

Association Position.—The Association approves the resolution because the subject is new and unknown in the field of medicine and research seems to be necessary.

Department of Health

In addition to the above measures, consideration was given to the revised version of S. 1140, 82d Congress, prepared and submitted by the National Doctors Committee for Improved Federal Medical Services, after discussion with a committee of the Board of Trustees in June, 1951. The Committee on Legislation felt that, while several of the changes suggested by the Association had been made, the revised bill still does not meet the main objections raised, i. e., the inclusion of military and Veterans Administration hospitals in the proposed new Department of Health. The Committee, therefore, voted to recommend opposition to the revised version of S. 1140.

Barbiturates

The possibility of new legislation designed to provide federal control of barbiturates by classifying them as narcotics and subjecting them to federal regulations was discussed. The Committee voted to oppose any new legislation designed to establish federal control of barbiturates. It was felt that additional federal control of drugs was unnecessary and that problems existing in that field should be handled by the profession and the states.

STATEMENT OF A. M. A. REPRESENTATIVE BEFORE HOUSE COMMITTEE ON U. M. T.

Mr. Chairman and members of the Committee: My name is Dr. F. J. L. Blasingame. I am engaged in the active practice of medicine in Wharton, Texas, and am a member of the Board of Trustees of the American Medical Association. I am appearing here today, with my colleagues, on behalf of that Association, regarding H. R. 5904, 82d Congress, and the report of the National Security Training Commission.

At the outset, let me say that our purpose in appearing before the committee is to make certain suggestions relative to the medical aspects of universal military training rather than to comment on whether such a program should be adopted. If the Congress, in its discretion, determines that a universal military training program is necessary, the American medical profession is ready to cooperate in its implementation to the fullest. We believe, however, that we can make a contribution at this time in connection with the preliminary planning for such a program, inasmuch as the various councils and departments of the Association have been studying, for some time, the factors involved in the most effective utilization of medical manpower in time of national emergency and in connection with a universal military training program.

The Association has on two occasions appeared before the National Security Training Commission and discussed the medical aspects of universal military training. On both occasions, our representatives and our suggestions were most graciously received. It is the belief of the American Medical Association that the commission is deserving of commendation for the extremely fine job that it has done in studying this subject and preparing a report.

Rather than discuss all of the medical questions that arise in connection with a program of this type, I will restrict my comments to the following three items.

CONTINUATION OF PREPROFESSIONAL AND PROFESSIONAL EDUCATION FOR QUALIFIED STUDENTS

It has always been the firm belief of the American Medical Association that, should a universal military training program be adopted, it is imperative that safeguards be included to prevent any disruption in the education of an adequate force of professional personnel. In order to accomplish the basic underlying purpose of Public Law 51, 82d Congress, i. e., to provide an adequate force of well-trained reserves, it is essential that the education of professional personnel be allowed to proceed without any impairment.

In its report to the Congress, dated Oct. 29, 1951, the National Security Training Commission strongly recommended against (*a*) split periods of preliminary training and (*b*) the deferment of professional students from the six month training period. On page 28 of the report, the Commission does, however, discuss the holding in abeyance of the reserve status "of a number of medical, dental and scientific students until the completion of their professional study."

Inasmuch as this was one of the recommendations of the Association, we were pleased to see its favorable acceptance by the commission. However, the proposal was suggested by the commission for study only, and is not included in the legislation that is currently being considered by this committee. With the rejection of split training periods and the deferment of professional students, it would appear that the holding of the reserve obligation in abeyance is the one remaining mechanism for insuring the uninterrupted flow of trained reserves. Therefore, the Association believes that it is imperative that this proposal be incorporated in the legislation under consideration. Such a change could be effected by adding a proviso to Sec. 9 (b) of H. R. 5904.

In this connection, two further points should be considered. The commission's report on page 28 also notes that: "Under such an arrangement, the reserve obligation of seven and one-half years would not begin to run until *graduation from* medical, dental or scientific school" (italics mine). It is believed that this recommendation should be changed to refer to completion of professional education rather than graduation from medical school. Such a revision would encompass the completion of internship and, in some instances, residency training. Such an amendment would appear to be in line with the thinking of the commission, in view of the following statement, which appears in the same paragraph as the above quoted statement: "it would also provide the armed forces with reservists who were qualified doctors, dentists and technicians, instead of mere apprentices in these fields."

In the implementation of this recommendation, it is essential that no undue advantage accrue to armed forces hospitals by allowing internship and residency service in such installations to count in the total reserve obligation. If this were permitted, the obtaining of interns and residents by civilian hospitals would be made increasingly difficult.

The American Medical Association sincerely believes that a person eligible for induction into the National Security Training Corps, whose aptitude or previous accomplishments indicate that he can best contribute to the nation as a trained professional man, should be placed in a category that will permit him to continue his education and that such a person be so classified before or at the time he reaches the age of induction. It is also believed that the selection of students and the control of educational programs should remain in the hands of the individual colleges and universities.

THE PERFORMANCE OF PREINDUCTION, INDUCTION, AND PERIODIC RESERVE PHYSICAL EXAMINATIONS

Neither Public Law 51, 82d Congress, nor the report of the commission specifies who will perform the induction and preinduction examinations for National Security Training Corps inductees or the periodic physical examinations while they are members of the reserves. If an attempt is made to perform these examinations by using full-time medical personnel of the armed forces, it will be necessary to call into service a much larger number of physicians than is currently required.

It is the belief of the American Medical Association that the use of additional physicians in the armed forces for this purpose is undesirable and unnecessary. It is recommended instead that such examinations be conducted by civilian physicians on a fee basis or by reserve personnel, for the purpose of maintaining a satisfactory reserve status. This system is now operating successfully with respect to the conducting of periodic physical examinations for reservists in the armed forces.

SOURCE AND SELECTION OF MEDICAL AND ALLIED PROFESSIONAL PERSONNEL

The third point I would like to mention deals with the proper agency to determine the medical and allied personnel necessary to man a universal military training program and the extent of the need.

There is considerable concern in the medical profession as to the manner of selecting such personnel and the proper agency to determine the extent of the need.

The American Medical Association is in favor of vesting the authority for making such decisions in a national civilian board or a comparable agency in order to insure the proper distribution of medical and other health reserves between civilian and military needs. Unless this is done, it will be extremely difficult to insure that persons will serve in a manner that will contribute the most to the strength of the nation.

There are two other extremely important medical aspects of universal military training to which I would like to allude. One deals with the medical treatment to be afforded members of the National Security Training Corps and the second with the eligibility of members of the corps for veterans' medical benefits.

With respect to the first, let me say that the American Medical Association thoroughly supports the concept that those persons who cannot meet the physical and mental requirements established for induction into the National Security Training Corps should, when possible, be rehabilitated, but it equally strongly opposes the idea that this responsibility belongs to the federal government.

The original version of S. 1, which eventually became Public Law 51, 82d Congress, contained a section providing for the assumption of corrective treatment and rehabilitative care by the federal government. The American Medical Association feels that the deletion of this section by the Congress, prior to the enactment of S. 1 into law, is indicative of Congressional intent in this regard. In our conversations with the National Security Training Commission, it is apparent that they are also in agreement with us on this point.

The treatment of injuries and sickness arising during, or as a direct result of, military service while in the National Security Training Corps will, of course, be a responsibility of the government. It is believed, however, that in light of the extremely short period of service and the favorable conditions that will prevail (i. e., no overseas assignments and no combat duty) the number of physicians per 1,000 inductees should not exceed the existing requirements for the civilian population generally. Further, it is believed that whatever additional medical personnel is required should be obtained without enlarging the regular complement of the medical corps of the three services. With respect to the reserve personnel that will be recalled in this connection, it is recommended that a rotation system be adopted, with short terms of active duty required.

The American Medical Association is in agreement with the recommendation of the National Security Training Commission concerning the status of trainees with respect to veterans' medical benefits.

It is our belief that the commission deserves particular praise for its constructive comments with respect to the undesirability of adopting the present framework of veterans' legislation as a means of dealing with disabilities and deaths among such trainees. The use of Veterans Administration installations for such purposes would create a need for additional facilities and increased medical staffs, therefore adding to the growing strain on the health and medical manpower resources of the nation created by the existing emergency.

In conclusion, I would like to express the appreciation of the American Medical Association for this opportunity to appear before your committee and present our views on this extremely important subject. If the Association can furnish any additional information or be of assistance in any other way be assured of our willingness to cooperate.

THE PHYSICIAN'S FEDERAL INCOME TAX

Federal income taxpayers on a calendar year basis must on or before March 15 do two things: 1. They must file their final returns for the year 1951. 2. They must file a declaration of estimated tax for 1952.

Copies of appropriate forms have already been distributed to prior taxpayers, together with a small booklet which presents the general requirements of the law. Physicians who are for the first time subject to the requirements of the federal income tax law may obtain the necessary forms from the office of the Collector of Internal Revenue having jurisdiction.

GROSS INCOME

A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, assuming that the return is on a cash receipts and disbursements basis, plus such money as he has received from investments and from other sources.

If a physician receives a salary as compensation for services rendered and in addition thereto living quarters or meals, the value to the physician of the quarters and meals so furnished ordinarily constitutes income subject to tax. If, however, living quarters or meals are furnished for the convenience of the employer, the value thereof need not be computed and added to the compensation otherwise received by the physician unless such quarters and meals are furnished as a part of compensation.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. As far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service, and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs, and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture, and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical, and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment, and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation deductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal, or average rates of depreciation, the following percentages have been suggested: automobiles, 25% a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments, and diagnostic apparatus, 10% a year; office furniture, 5% a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in each case.

Dues.—Dues paid to societies of a strictly professional nature are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are generally held to constitute personal expenses and as such are not deductible. If, however, membership in social organizations, such as a country club, is maintained both for personal and professional or business purposes and if evidence can be produced to substantiate the claim that a part of the expenses of such membership was incurred for business purposes, then it would seem that these latter expenses would be deductible. Further discussion of this particular aspect of the federal law will be found in a subsequent paragraph dealing with the deductibility of entertainment expenses.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals, and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Entertainment Expenses.—The deductibility of entertainment expenses, when incurred for business purposes, has been upheld, as applied to an actor, in the case of *Blakmer v. Commissioner*, 70 F. (2d) 255. In the case of *Jacobson*, 6 T.C. 1048, the taxpayer was allowed a deduction of expenses incurred for entertaining clients and employees of his law firm. The deductibility of such expenses by an attorney came before the U. S. Tax Court in the case of *Clyde A. Armstrong v. Commissioner*, decided Aug. 29, 1947, 6 TCM 997. In a memorandum opinion rendered by Judge Opper, this was said:

> Taxpayer, a Pittsburgh attorney, became a member of the University Club and the Duquesne Club in order to have available facilities for the entertainment of his clients; his purpose in joining the clubs was not particularly to make contacts productive of new business. In 1942, 1943 and 1944 the Commissioner disallowed deductions representing club dues, but allowed 50 per cent of the house bills incurred by taxpayer at each of the clubs during those years. The court finds that taxpayer used the club facilities not less than 50 per cent of the time for entertaining clients and other purposes incident to the practice of his profession, and allows the deduction of dues to that extent.

In the December 1948 issue of the *Medical Annals of the District of Columbia*, page 697, there was published correspondence that had passed between the secretary of the Medical Society of the District of Columbia and the Internal Revenue Agent in the Baltimore Division, Treasury Department, in which the latter

---

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association.

stated that if entertainment expenses incurred by a physician have a direct relation to the production of income, and can be supported by the taxpayer, they will be taken into consideration in determining his net taxable income.

Collectors of Internal Revenue in several jurisdictions have questioned the right of physicians to deduct entertainment expenses, contending that it is unethical for a physician to make expenditures of this character. The Judicial Council of the Association, in its report to the House of Delegates at the Los Angeles, 1951, meeting said in part:

"The Council does not consider such expenditures as *per se* unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable." This report was approved by the House of Delegates (*J. A. M. A.* *147:1686, Dec. 22, 1951*).

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeur's wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

Surgical Uniforms.—Amounts expended by surgeons for the purchase and maintenance of distinctive types of uniforms which are not adaptable to ordinary wear and which are required to be worn while on duty are deductible as ordinary and necessary business expenses.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. An individual taxpayer can deduct such contributions only to the extent that they do not exceed 15% of his adjusted gross income. The physician may not deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Bad Debts.—Physicians who make their returns on a cash receipts and disbursements basis, as most physicians do, cannot claim deductions for bad debts.

Taxes.—Taxes generally, either federal or state, are deductible by the person on whom they are imposed by law. Both real and personal property taxes are deductible; but so-called taxes, more properly assessments, paid for local benefits, such as street, sidewalk, and other like improvements, imposed because of and measured by some benefit inuring directly to the property against which the assessment is levied, do not constitute an allowable deduction from gross income. Physicians may deduct state gasoline taxes and state sales taxes. In some states sales taxes are imposed on the seller, but if they are passed on to the buyer the latter may deduct them.

State income and use taxes are deductible; federal income taxes are not. Federal import, excise, or stamp taxes are deductible only to the extent that they are attributable to business activities. State automobile license fees are deductible. If a state or local fee is imposed for regulatory purposes, and not to raise revenue, the fee may not ordinarily be deducted as a tax. If such fees, however, are classifiable as a business expense they are deductible as such. Annual registration fees imposed on physicians probably come within the category of regulatory fees and should be deducted as a business expense rather than as taxes. Local and state occupational taxes imposed on physicians are deductible either as taxes or as a business expense, depending on the purpose for which the tax is imposed.

The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Medical Expense.—A taxpayer may deduct amounts in excess of 5% of adjusted gross income expended for medical, dental and hospital expense for himself, his spouse or a dependent, not compensated for by insurance or otherwise, including amounts paid for health and accident insurance, according to a prescribed formula. Effective for years beginning after 1950, this 5% limitation does not apply with respect to medical expenses for the care of the taxpayer or his spouse if either has reached the age of 65 before the close of the year. The law limits the deduction to a maximum of (*a*) $1,250 if the taxpayer claims only one exemption; (*b*) $2,500 if the taxpayer is a single person or if married and filing a separate return and claims more than one exemption; (*c*) $2,500 if the taxpayers are married and file a joint return and claim two exemptions, $3,750 if three exemptions are claimed and $5,000 if four or more exemptions are claimed.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a [illegible]ness expense.

Sale of Spectacles [illegible]
should enter as [illegible]
deduct as an [illegible]

FEDERAL MEDICAL LEGISLATION

Universal Military Training

Senator Russell of Georgia introduced S. 2441, on his own behalf and for eight other Senators, to provide for the administration and discipline of the National Security Training Corps. It differs from the bill introduced in the House by Representative Vinson (H. R. 5904), the Armed Services Committee chairman, in two major respects: 1. Section 8 of this bill provides that the Department of Defense, after preparing the annual budget for the training corps, shall submit budget estimates to the National Security Training Commission for approval. The Vinson bill gives the commission advisory authority only; therefore, the Russell bill provides greater civilian control over the budget. 2. The Russell bill contains a section not found in the Vinson bill wherein any trainee, after finishing the six months period of training, who volunteers for, and satisfactorily completes, a term of enlistment in certain organized units of the armed forces will be released from further service and training. Further, any trainee who, after completing six months of training, volunteers and accepts service in certain reserve components would be released from further training and service after three years, unless Congress authorizes his reinduction at a later date. This bill is identical with H. R. 5903, previously reported.

Another UMT bill, H. R. 6032, was introduced by Representative Brooks of Louisiana. It also would provide for the administration and discipline of the National Security Training Corps. This bill is identical with S. 2441, described above.

Social Security Amendments

Representative Ford of Michigan introduced H. R. 6078, proposing to amend the Social Security Act to permit federal participation in public assistance for patients in private institutions for tuberculosis and for patients in private institutions for mental diseases. At present, the several states conducting public assistance programs (for the elderly, blind, and totally and permanently disabled) partially supported by the federal government, may not use federal funds to make money payments to, or for medical care in behalf of, recipients of such public assistance programs who are patients in private or public institutions. This bill would remove the prohibition in the case of recipients who are inmates of private institutions while retaining the prohibition for such payments to or in behalf of such recipients in public institutions.

Veterans Presumption of Service Connection

S. 2465 was introduced by Senator Johnson of Colorado. It would liberalize the basis for establishing wartime service connection for active tuberculosis, psychoses, and multiple sclerosis. It is identical with H. R. 5892, which would create a presumption of service connection if any of the three mentioned diseases developed within three years after discharge.

Cancer Research

Senator Neely of West Virginia introduced S. 2409, proposing to authorize and request the President to undertake to mobilize in some convenient place in the United States an adequate number of the world's outstanding experts and coordinate and utilize their services in a supreme endeavor to discover means of curing and preventing cancer. This bill is identical with H. R. 556 and with other bills in previous Congresses.

STATE MEDICAL LEGISLATION

Georgia

Bills Introduced.—H.R. 194, proposes to authorize an investigation of the possibility of requiring **third and fourth year medical students** to spend at least two months interning at the Milledgeville State Hospital. H. 659 and S. 247, propose amendments to the uniform narcotic act relating to the sale of **narcotics and harmful and habit forming barbiturates** to a minor. H. 760, proposes amendments to the uniform narcotic act relating to the illegal sale of **narcotics** to minors. S. 291, to amend the premarital examination law, proposes to authorize **osteopaths** to sign the necessary certificates.

New York

Bills Introduced.—A.R. 36; proposes the creation of a joint legislative committee to study the question of **mental retardation of children** with a view toward prevention and better ways of amelioration of the conditions arising out of mental retardation. A. 3 and S. 3, propose to direct the mental health commission to formulate a program for the development and maintenance of one or more clinics for the diagnosis, treatment, and rehabilitation of **chronic alcoholics.** A. 45, proposes an appropriation for the maintenance of **school milk and school lunch programs.** A. 74, to amend the **state income tax law,** proposes that any taxpayer shall be entitled to deduct 100% of the expenses paid for **medical care** for each dependent who has reached the 65th birthday. A. 140, proposes the creation of an **adult hygiene and geriatrics** division in the department of health. A. 142, proposes to authorize the comptroller to enter into contracts for furnishing **medical and surgical services** and hospital services to officers and employees in the state civil service. A. 264, A. 500, S. 373 and S. 518, to amend the public health law, propose to prohibit the sale of **hypodermic syringes or needles** except upon the prescription of duly licensed physicians or veterinarians, unless the sale is to such persons as physicians, nurses, pharmacists, hospitals, or the like. A. 270, to amend the public health law, proposes regulations for the compulsory, health, treatment, guidance, and rehabilitation of **adolescent drug users.** A. 301 and S. 237, propose the enactment of a comprehensive statewide system of **health insurance.** A. 339, proposes that the **sale of ready-made reading spectacles** for reading glasses as merchandise by persons who do not assume directly or indirectly to adapt them to the eye, and where the selection of the spectacles is at the discretion of the purchaser, shall not be covered by the law relating to the sale of eyeglasses. A. 432, to amend the law relating to **physiotherapy,** proposes that applicants for a license must show that they have completed two years of a four-year course of study in a college or university maintaining a standard satisfactory to the department which included courses of at least six semester hours each in English, physics, biology, or zoology, and general chemistry and at least three semester hours in organic chemistry. A. 441 and S. 252, to amend the judiciary law, propose to exempt **chiropodists** from jury duty. A. 544, to amend the labor law, proposes that in every industry, trade, or occupation where 50 or more persons are employed, the labor board shall require the establishment of a **first-aid station** under the guidance of a competent person whose sole duty shall be providing aid for injuries received during employment. A. 603 and S. 464, to amend the civil practice act, propose to include **chiropodists** with physicians, dentists, and nurses, so far as the disclosure of professional information is concerned. A. 686, to amend the education law, proposes to authorize **physiotherapists** to use the roentgen ray or x-ray if they have had at least a two year course in radiographic technic at a college or university approved by the state education department. A. 863, proposes to authorize the state commissioner of health to designate approved laboratories or institutions wherein properly conducted **scientific tests or experiments** or investigations involving the use of live animals may be performed or conducted. The proposal would authorize the state commissioner of health to prescribe the rules under which such approval would be granted. A. 868, to amend the workmen's compensation law, proposes to authorize the board to designate **physicians especially qualified** with respect to the diagnosis or treatment of a disability to examine claimants. S. 3, proposes that the mental health commission formulate a program for the development and maintenance of one or more clinics in the state, operated by public or private nonprofit community agencies, for the **diagnosis, treatment, and rehabilitation of chronic alcoholics.** S. 71, to amend the civil service law, proposes to authorize the state to enter into contracts of the furnishing of **medical and surgical services** and hospital services to employees. S. 110, to amend the public health law relating to the powers and duties of the commissioner in relation to **cancer control,** proposes to direct the commissioner to conduct periodical investigations of new developments in the study of cancer and to file the reports of such findings. S. 111, proposes to require the commissioner of health to make available to any qualified member of the medical profession, upon request, the records relating to the care and treatment of **cancer** patients at the Roswell Park Memorial Institute. S. 112, to amend the public health law, proposes to direct the state commissioner of health to establish an agency to provide public instruction by means of motion pictures, lectures, for the **care, treatment, diagnosis, and control of cancer.** S. 169, to amend the education law, proposes regulations relating to a **subsidy for student nurses.** S. 225, to amend the workmen's compensation law, proposes that **resident physicians, resident interns, and assistant resident interns** in prisons, reformitories, insane asylums, and hospitals maintained by a municipal corporation shall be employees within the meaning of the state workmen's compensation act. S. 249, to amend the law relating to **physical therapy,** proposes to define a physical therapist as one who treats or offers to treat any human pain, injury, deformity, or physical condition by the use of actinotherapy; hydrotherapy, which shall include under hydrotherapy, electric baths of all types, medicated baths of all types, and the giving of colonic irrigations; mechanotherapy, which shall include all types of therapeutic exercise and massage; thermotherapy and electrotherapy, exclusive of the x-ray. S. 252, to amend the judiciary law, proposes that **pediatrists** shall be exempt from jury duty. S. 254, proposes additional regulations relating to preprofessional training of applicants for a license to practice physiotherapy. S. 272, proposes to prohibit the sale of **hypodermic syringes and hypodermic needles** except upon the prescription of a duly licensed physician or veterinarian. S. 277, to amend the public health law, proposes to provide for the compulsory care, treatment, guidance, and rehabilitation of adolescent drug users. S. 385, proposes that any hotel, club, camp, or other resort having sleeping accommodations for 300 or more persons should at all times have a **resident physician** in attendance. S. 403, to amend the penal law, proposes to make it unlawful for any person to sell at retail or give away any **antihistamine drug,** or any other preparation containing antihistamines, without obtaining a prescription of a duly licensed practitioner of medicine.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

MEDICAL NEWS

CALIFORNIA

Typhus Outbreak in Altadena.—A localized outbreak of endemic typhus fever has occurred in Altadena in Los Angeles County, in an area where no previous cases had been reported, according to the California State Department of Public Health. On December 15 two cases had been confirmed by laboratory tests, and tests on another dozen suspected cases were being run at the state virus laboratory in Berkeley. The outbreak is believed to have been associated with the demolition of a rat-infested barn. A state mobile laboratory was dispatched to the area so that on-the-spot examination could be made of fleas on household pets and trapped rats.

Lectures on Legal Medicine.—The schools of law and medicine on the Los Angeles campus of the University of California and university extension will cooperate with the Junior Bar of the State Bar Association of California to present lectures on orientation in legal medicine from 7 to 9 p. m. on seven Mondays beginning February 11 at the California Teachers Association Building, 612 South Figueroa St. The conferences will present distinguished local attorneys and medical men as speakers. Applications for enrollment may be obtained from the Department of Conferences, University Extension, University of California, Los Angeles 24. Enrollment fee, including a copy of proceedings, is $12.50.

Postgraduate Assembly in Los Angeles.—The Postgraduate Assembly and Convention, sponsored by the Alumni Association of the College of Medical Evangelists School of Medicine, Los Angeles, will be held March 2-4 at the Biltmore Hotel in Los Angeles. Among the 37 speakers will be Maj. Gen. George Armstrong, Washington, D. C.; Drs. Lester R. Dragstedt and Walter C. Alvarez, Chicago; Drs. Sara M. Jordan, Martin L. Tracey, and John W. Norcross, Boston; Dr. George Lull, Chicago, Secretary and General Manager of the American Medical Association; Dr. Priscilla White, Boston; Dr. Harold G. Wolff, New York, and Dr. Giles A. Koelsche, Rochester, Minn. Short courses in therapeutics, internal medicine, pediatrics, roentgenology, dermatology, psychiatry, surgery, otolaryngology, urology, proctology, anesthesiology, and obstetrics and gynecology are to be given on March 5-7. Members of the faculties of Western medical schools will serve on the faculty for these sessions. For information address Evelyn R. Strachan, Managing Director, 312 North Boyle Ave., Los Angeles 33.

Tropic Diseases Research Project. — The newly-established Pacific Tropic Diseases Research Project will have its headquarters in the department of infectious diseases at the University of California School of Medicine at Los Angeles. It will be directed by Dr. John F. Kessel. William A. Robinson, Tahiti, author of "Ten Thousand Leagues Over the Sea," is assisting in establishing the project.

Immediate objectives of the program according to Dr. Stafford L. Warren, dean of the medical school, are (1) to continue the investigation of filariasis, (2) to study the recent outbreak of poliomyelitis in Tahiti, and (3) to study other tropical diseases such as leprosy and yaws. The long-range objectives of the project are to provide a center for teaching and research on tropical diseases on the Los Angeles campus and continuation of field studies in the Pacific Ocean area. The advisory committee of the Pacific Tropic Diseases Research Project will consist of Dr. Charles M. Carpenter, professor of infectious diseases at the university; Willard H. Wright, Ph.D., director, division of tropical diseases, National Institutes of Health, Bethesda, Md., and Dr. Henri Galliard, professor of parasitology, University of Paris, as well as Cornelius Crane, Chicago, and Mr. Robinson. Dr. Kessel is now in Tahiti, organizing the field staff. The Pacific Tropic Diseases Research Project will work in cooperation with the U. S. Public Health Service and the French Colonial Medical Service. Dr. Kessel spent four years with the Rockefeller Foundation at the Peking Union Medical College from 1923 to 1927, and from 1927 to 1929 he was associate professor of parasitology in the department of zoology at U. C. L. A.

CONNECTICUT

Appointments in Psychiatry.—The department of psychiatry and mental hygiene of Yale University, New Haven, has announced the appointment of Dr. Francis J. Braceland, psychiatrist-in-chief of the Institute of Living, as clinical professor of psychiatry. Dr. Jules V. Coleman, New Haven, and Dr. William L. Pious, New Haven, have been appointed associate clinical professors of psychiatry, and Dr. Else Pappenheim, who has been associated with Yale University since 1948, has been promoted to assistant clinical professor of psychiatry.

Yale Opens Marriage Counseling Clinic.—One of the first marriage counseling clinics to be conducted under the auspices of a university medical school will open this spring at Yale University, sponsored jointly by the departments of psychiatry and of obstetrics and gynecology. The clinic is being established to satisfy a demand on the part of physicians, clergymen, social workers, and others. It will provide premarital counseling, although most of the work is expected to be with married persons. The Yale clinic will serve couples in the New Haven area and will work in cooperation with other agencies that want to refer cases. In certain cases the clinic will work in conjunction with the infertility clinic of Yale. A grant from the Planned Parenthood League of Connecticut has already been received to help in starting the counseling service.

DISTRICT OF COLUMBIA

Personal.—The American Board of Obstetrics and Gynecology has announced the election of Dr. John L. Parks, Washington, D. C., as a director of the board. Dr. Parks succeeds Dr. Joseph L. Baer, Chicago, who has been vice-president of the board for over 20 years and who has resigned.

Health Department Appointment.—The appointment of Dr. Frederick C. Heath to replace Dr. Arthur E. Cliff as assistant director of public health, District of Columbia Health Department, was announced January 10. Dr. Heath is resigning his present position as health officer, Fairfax County, Va., to accept this new assignment.

GEORGIA

Meeting of Ophthalmologists and Otolaryngologists.—The Georgia Society of Ophthalmology and Otolaryngology will hold its annual meeting March 7-8 at the General Oglethorpe Hotel on Wilmington Island, Savannah. Guest speakers and their subjects are as follows:

Murray F. McCaslin, Pittsburgh, Selection of Anesthesia in Ophthalmology.
J. Conrad Gemeroy, Detroit, External Diseases of the Eye; Management of Metallic Intraocular Foreign Bodies.
Joseph S. Haas, Chicago, Differential Diagnosis of the Primary Glaucomas; Provocative Tests in Glaucoma.
Henry B. Orton, Newark, Applied Surgery of the Neck.
Albert P. Seltzer, Philadelphia, Plastic Surgery of the Nose.
John R. Lindsay, Chicago, Vertigo: Differential Diagnosis and Treatment; Secretory Otitis Media.

The registration fee is $20.

ILLINOIS

Society News.—A meeting of the Illinois Chapter of the American College of Chest Physicians will be held jointly with the Chi[illegible] oentgen Society on February 14 at the University [illegible] go. Th[illegible] gram will be devoted to a discussion of [illegible] v [illegible] yndrome.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, [illegible] pitals, education and public health. Programs should be receive[illegible] three weeks before the date of meeting.

Lectures on Psychiatry.—The first in a series of thirteen seminars in modern concepts in psychiatry was given at the Veterans Administration Hospital, Downey, and at the Mental Hygiene Clinic, 366 W. Adams St., Chicago, January 16. Melville J. Herskovits, Ph.D., Evanston, editor of the *American Anthropologist,* gave three lectures on January 16, the first and second being held at Downey Hospital at 10 a. m. and 1 p. m., and the third at the Mental Hygiene Clinic at 8 p. m. Dr. Herskovits is chairman of the committee on international relations in anthropology of the National Research Council. Speakers at the remaining sessions are as follows: Drs. Clara Thompson, St. Louis; Helen V. McLean, Chicago; James G. Miller, Chicago; Norman Haire, London, England; Harry C. Solomon, Boston; Paul H. Hoch, New York; Harold E. Himwich, Galesburg, Ill.; Ladislas J. Meduna, Chicago; R. Burke Suitt, Durham, N. C.; Karl M. Bowman, San Francisco; David McK. Rioch, Rockville, Md., and Henry A. Davidson, Newark, N. J. All members of the medical and allied professions are invited.

Chicago

Lewis Linn McArthur Lecture.—Dr. Russell S. Fisher, associate professor of legal medicine at the University of Maryland, will deliver the 28th Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine at the Palmer House February 22 at 8 p. m. His subject will be "The Changing Perspective in Medicolegal Practice."

Department of Preventive Medicine Becomes a Division.—The department of preventive medicine at the University of Illinois College of Medicine has been made the division of preventive medicine in the department of medicine in action taken by the university's board of trustees. The merger was recommended by a committee of the faculty.

Grant for Hematology Research.—The Olivia Sue Dvore Foundation presented $5,000 January 16 to Dr. Steven O. Schwartz, a director of the Hektoen Institute for Medical Research of the Cook County Hospital, for studies on leukemia and other blood diseases. A total of $22,000 has been donated by the foundation since it was organized three years ago.

New Heart Association Seals for Fund Drive.—Sheets of seals portraying 27 outstanding figures in medical history are being used this year by the Chicago Heart Association in its campaign for funds of $600,000. The seals are to be mailed to residents of Chicago during February, National Heart Month. A stamp album containing information about each of the medical leaders, from Hypocrates to Herrick, is to accompany the seals. It also carries two pages depicting the year around work of the heart association.

Appointments at Northwestern.—Three new appointments and six promotions in the faculty of the Northwestern University Medical School have been announced. Dr. Benjamin Boshes, associate professor of nervous and mental diseases, has been promoted to professor and named acting chairman of the department. Dr. George M. Landau, formerly associate professor of roentgenology at Loyola University, has been appointed assistant professor of radiology, and Dr. Lee G. Sewall, Roanoke, Va., associate professor of nervous and mental diseases. Other promotions include: Dr. Fred W. Merrifield, from assistant to associate professor of surgery; Reinhold Benesch, Ph.D., from instructor to assistant professor of biochemistry; Dr. Nathan N. Crohn, from associate in surgery to assistant professor in surgery; Dr. Paul B. Szanto, from associate in pathology to assistant professor of pathology, and Dr. George C. Turner, from instructor to associate in medicine.

INDIANA

Clinic on Reconstruction of the Nose.—Dr. Maurice H. Cottle, Chicago, will conduct a clinic on the restoration of nasal function by the surgical reconstruction of the nose on February 12-14 at the Indiana University Medical Center, Indianapolis.

The Burton D. Myers Lecture.—Dr. Charles A. Doan, dean of the Ohio State University College of Medicine, Columbus, will deliver the third annual Burton D. Myers Lecture at the Indiana University School of Medicine, Indianapolis, the evening of February 29. All physicians are invited. The local chapter of Nu Sigma Nu fraternity established the lecture series in 1950 as a tribute to the late Dr. Myers, an alumnus and emeritus professor of anatomy. A dinner for chapter members and alumni will precede the lecture.

Personals.—Dr. Charles W. Myers, superintendent of Indianapolis General Hospital for 20 years, retired on January 16. He was succeeded by Dr. Gerald F. Kempf, Indianapolis, who has been city health director since 1946.——Dr. Robert K. S. Lim, head of the department of physiology and pharmacology at Creighton University Medical School in Omaha, has been appointed head of the section of physiology and pharmacology of the Miles-Ames Research Laboratory in Elkhart.——Dr. S. Milton Rabson, laboratory director, St. Joseph Hospital, Fort Wayne, has been elected a corresponding member of the British Association of Forensic Pathologists.

KENTUCKY

University Appointment.—Dr. U. Pentti Kokko has been appointed associate professor in child health research at the University of Louisville School of Medicine. He will continue studies in poliomyelitis in the school's Kentucky Child Health Foundation Laboratory, which is under the direction of Dr. Alex J. Steigman, professor of child health.

LOUISIANA

Dr. Rudolph Matas Honored.—An honorary fellowship in the American College of Surgeons was presented in January to Dr. Rudolph Matas, emeritus professor of surgery at Tulane University, at special ceremonies in New Orleans. The fellowship was conferred by Dr. Alton Ochsner, president of the college and professor of surgery at Tulane, who succeeded Dr. Matas as chairman of the department in 1927. Dr. Matas was one of the original founders of the college in 1913, serving as its president in 1925-26 and as its vice-president in 1913 and 1921. Dr. Matas graduated from the Tulane medical school in 1880.

MICHIGAN

Personals.—On November 13 Dr. William C. Behen of Lansing and Dr. Paul G. Hanna of St. Joseph were appointed to the Michigan State Board of Registration in Medicine. Dr. Joseph P. Bertucci of Ishpeming has also been appointed to the board.

Public Health Directors Meeting.—At the invitation of the state health commissioner, Dr. Albert E. Heutis, the health directors of Michigan's 51 local full time health departments, met in Lansing for a three day conference beginning February 6 to outline a course of action for the health programs in the state. Four main topics were taken up in committee discussions:

Administration, Vladimir K. Volk, director, Saginaw County Health Department, chairman.
Environmental and Industrial Health, Eldred K. Musson, deputy director, Wayne County Health Department, chairman.
Disease Control and Laboratories, Winston B. Prothro, director, Kalamazoo City-County Health Department, chairman.
Child Health, Vergil N. Slee, director, Barry County Health Department.

This is the third year the state health commissioner has called on the local health directors for specific recommendations for the improvement of state and local health department programs. The previous conferences resulted in 97 recommendations, practically all of which have been put into effect, Dr. Heustis states.

MINNESOTA

Dr. Howard Succeeds Dr. Aagaard.—Dr. Robert B. Howard has been named director of continuation medical education at the University of Minnesota, Minneapolis, succeeding Dr. George N. Aagaard, who took over his new duties in January as dean of the Southwestern Medical School at Dallas, Texas.

Grant for Research in Tuberculosis.—The Minnesota Public Health Association has established the H. Longstreet Taylor grant of $7,500 to be made annually to the University of Minnesota for tuberculosis research. The fund is named for the late

Dr. Taylor, who was active in the state campaign for the prevention of tuberculosis. Dr. J. Arthur Myers, professor of preventive medicine and public health at the university, is administering the grant.

NEVADA

Narcotic Violation.—Dr. William C. Harper, Las Vegas, was convicted of violation of the federal narcotic law at Las Vegas on May 28, 1951, and was sentenced to a term of eight years in the United States penitentiary to be selected by the Attorney General.

NEW HAMPSHIRE

State Code of Cooperation.—The New Hampshire Medical Society's code of cooperation with hospitals, the press, and radio, adopted at its annual meeting in September, has subsequently been adopted by all component county societies. The state society has received requests from the national wire services and most of the state medical societies for copies of the code. Recently the Pennsylvania State Medical Society adopted a similar code and used that of New Hampshire as a basis.

NEW YORK

Rename Brooklyn Cancer Institute.—The Brooklyn Cancer Institute, a unit of Kings County Hospital Medical Center in Brooklyn, was renamed January 10 the John E. Jennings Hospital in memory of Dr. Jennings, leader in the establishment of the institute and its first director. Dr. Jennings died May 25, 1945. Acting director of the hospital is Dr. Asa B. Friedmann.

Hospital Affiliates with Georgetown University.—St. Mary's Hospital of Rochester has affiliated with Georgetown University School of Medicine, Washington, D. C., to augment its teaching facilities. Full time staff members from Georgetown will visit St. Mary's in Rochester monthly for periods of four or five days, and interns and residents will be rotated for brief periods through the Georgetown center. The plan also provides for short visits of St. Mary's attending staff to the Georgetown center for special instruction and observation. This new venture in the field of postgraduate education is under the direction of Dr. Harold J. Jeghers, professor of medicine at Georgetown University.

Birth Registration Test.—The State Department of Health reported January 14 that a federal and state birth registration test made in conjunction with the 1950 census showed 99.8% of all babies born in upstate New York and 99.2% of the babies born in New York City had their births registered. The 99.5% registration for the entire state compares with a 97.8% figure for the entire nation. The 1950 birth registration test is the second nationwide check of registration completeness in the United States, and was conducted as a cooperative project by the Bureau of the Census, the National Office of Vital Statistics, and state and territorial offices of vital statistics. The first such check, made in 1940, showed 98.9% registration completeness for the state as a whole. On a nationwide basis 92.5% of all newborn babies had their births registered in that year.

Postgraduate Education.—Two postgraduate lectures have been arranged for the Elmira Chapter of the Academy of General Practice to be given at the Mark Twain Hotel in Elmira at 6:30 p. m. as follows:

February 13, Office Gynecology, Clyde L. Randall, Buffalo.
April 9, Diagnosis and Treatment of Common Neurological Disorders, Paul H. Garvey, Rochester.

The third in a series of postgraduate lectures will be delivered by Dr. Gilbert M. Beck, professor of psychiatry at the University of Buffalo School of Medicine, on February 14 at 4 p. m. at a meeting of the Saratoga County Medical Society at the New Worden Hotel in Saratoga Springs. His subject will be "Psychiatric Problems in General Practice." Dr. Paul Reznikoff, professor of clinical medicine at Columbia University Medical College, New York, will speak on "Diagnosis and Treatment of Anemia" at a meeting of the Dutchess County Medical Society March 12 at 8:30 p. m. at Hudson River State Hospital in Poughkeepsie. This instruction is provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

New York City

Annual Welch Lecture.—Dr. Gilbert Dalldorf, director of the Division of Laboratories and Research of the New York State Department of Health, will deliver the annual William Henry Welch Lecture of the Mount Sinai Hospital of New York in Blumenthal Auditorium February 13 at 8:30 p. m. His subject will be "From Clostridium Welchii to the Coxsacki Viruses: Changing Microbiology."

Appoint Director of Institute of Administrative Medicine.—Dr. E. Dwight Barnett, director of Harper Hospital in Detroit since 1946, has been appointed first director of Columbia University's Institute of Administrative Medicine (The Journal, Dec. 15, 1951, page 1585). Dr. Barnett is a former director of school health in Santa Rosa, Calif., and a past director of health and hospitals in Sonoma, Calif.

State's First Licensed Physician is Still in Practice.—Dr. Leopold Stieglitz, 84, who holds the state board of regent's medical license No. 1, began his 61st year of practice January 25. Dr. Stieglitz passed the board's first examination with a combined mark, in five subjects, of 499 out of 500. He took his examination after receiving his medical degree, *summa cum laude*, at Heidelberg, Germany, in 1891. He still maintains a general practice in his modest office at 1040 Park Ave.

Symposium on Rheumatic Fever.—The New York Society of Circulatory Diseases will hold its third regular meeting at 8:30 p. m. February 26 in room 440 of the New York Academy of Medicine building. Guest speakers at this session, devoted to a symposium on rheumatic fever, will include:

Gene H. Stollerman, medical director, Irvington House, Clinical Features and Prophylaxis in Children.
Charles K. Friedberg, associate physician, Mount Sinai Hospital, Clinical Features and Differential Diagnosis in the Adult.
Joseph J. Bunim, New York University College of Medicine, Modern Treatment.

The meeting is open to all members of the medical profession.

Change Date of Course in Exfoliative Cytology.—The date for this course to be given at Cornell University Medical College, as originally announced in The Journal, Dec. 8, 1951, page 1477, has been changed to March 10-June 6. This course in cytologic interpretation is open to a limited number. It will cover the cytology of the gastrointestinal, respiratory, urinary, and female genital tracts, as well as exudates. Instruction in laboratory procedures related to cytology will be given. Arrangements for shorter periods of instruction covering certain principles of exfoliative cytology may be made for physicians who are unable to take the entire three month course. Tuition is $300 or proportionate fees for shorter periods. Instruction is under the direction of Dr. George N. Papanicolaou and Dr. John F. Seybolt.

Personals.—Dr. George T. Pack recently visited South America and at the invitation of national surgical societies and universities delivered addresses in Chile, Peru, and Argentina.——Dr. Theodore E. Allen has been appointed associate medical director of the Arabian American Oil Company.——Dr. J. Lewis Amster, honorary consulting surgeon of Morrisania City Hospital and creator of the Amster Library there, was recently selected as one of the two recipients of the Outstanding Bronx Citizen's Award of 1951.——Richard J. Block, Ph.D., has been appointed director of the new biochemical laboratories of the special products division of the Borden Company. He will retain his position as a lecturer at New York Medical College, Flower and Fifth Avenue Hospitals.——Dr. Louis L. Amato has been appointed medical director of the Frances Schervier Home and Hospital.

TEXAS

Gift for Cardiovascular Research.—The family of Mr. H. H. Weinert of Seguin, a former regent of the University of Texas, has made a donation of $2,500 to the University of Texas Medical Branch, Galveston, to support cardiovascular research under the direction of Dr. George Herrmann, professor of medicine.

Society News.—At the annual meeting of the Texas Academy of Internal Medicine at Galveston in January, Dr. W. Clay Dine Jr. of Amarillo was elected president.——The fourth annual meeting of the Texas Rheumatism Association was held January 18 in Galveston under the presidency of Dr. George W. N. Eggers of the University of Texas Medical Branch, Galveston. A feature of the meeting was a symposium on rheumatic fever in adults and children. Dr. Edward F. Rosenberg, chairman of the arthritis clinics of the Michael Reese and Mt. Sinai hospitals in Chicago, was guest speaker. Dr. Howard C. Coggeshall, clinical associate professor of medicine in Southwestern Medical School of the University of Texas, Dallas, was elected president for the coming year.

VIRGINIA

University Appointment.—Dr. Edward V. Jones, former instructor in psychiatry at the University of Michigan, Ann Arbor, has been appointed assistant professor of neurology and psychiatry at the University of Virginia, Charlottesville. Dr. Jones will be responsible for the direction of the laboratories of encephalography.

WEST VIRGINIA

Visiting Committee for Medical School.—President Irvin Stewart has appointed the first visiting committee for West Virginia University's School of Medicine, designating Dr. William R. Laird of Montgomery as chairman for the first 18 months of his term that expires June 30, 1954. Other members are Dr. Newman H. Dyer, Charleston, state health director; Dr. Delivan A. MacGregor, Wheeling; Dr. Albert U. Tieche, Beckley, and Dr. Walter E. Vest, Huntington. This is the sixth visiting committee functioning at the university. Their purpose is to bring the teaching and research activities into closer contact with the life of the state. Meetings are held at intervals at the call of the chairmen.

ersonals.—Dr. Isaac C. East, Oxford, Miss., has been named erintendent of Spencer (W. Va.) State Hospital to succeed Dr. Robert T. Stenberg, resigned. Dr. East has been clinical director of the Eastern State Hospital at Williamsburg, Va., since 1947, and, in addition, has directed the Lower Peninsula Mental Hygiene Clinic at Newport News.——Dr. William H. Guthrie, Red Jacket, was scheduled to leave late in January to serve a three year term as physician and surgeon for the Presbyterian Board of Foreign Missions in French Cameroun, West Africa. This will be the second three year term served by Dr. Guthrie in that area. His address, effective February 1, will be Central Hospital, Mission Protestante Americaine, Ebolowa, French Cameroun, West Africa.

WISCONSIN

Personal.—Dr. Pierce D. Nelson, Madison district health officer since 1949, has become director of the tuberculosis and heart disease control divisions of the state board of health.

Research on Leukemia.—The Milwaukee Division of the American Cancer Society has awarded a $25,000 grant to Marquette University School of Medicine, Milwaukee, for research on leukemia. Dr. Anthony V. Pisciotta, who presently is in Boston as assistant to Dr. William Dameshek, has been chosen to head the project. He will devote full time to the program beginning July 1, working directly with leukemia patients at Milwaukee County General Hospital.

Dr. Swindle to Retire as Department Director.—Dr. Percy F. Swindle, professor and director of the department of physiology at Marquette University School of Medicine, Milwaukee, since 1922, is retiring from his administrative duties to devote more time to research as an active member of the department. Dr. James J. Smith, former dean of the Stritch School of Medicine of Loyola University, Chicago, and presently chief of the education division of the department of medicine and surgery at the Veterans Administration Central Office, has been named to succeed Dr. Swindle. He will join the faculty in March.

GENERAL

Society Elections.—At the annual meeting of the American Academy of Occupational Medicine January 17-18 the following officers were among those elected for 1952: Dr. James H. Sterner, Rochester, N. Y., president; Dr. Allan J. Fleming, Wilmington, Del., vice-president; Dr. Arthur F. Mangelsdorff, New York, treasurer, and Dr. Leonard J. Goldwater, New York, secretary.——Delegates to the International Congress on Mental Health that met in Mexico City December 11-19 elected the following officers: Dr. Alfonso Millan, Mexico, D. F., president, and Dr. George S. Stevenson, New York, treasurer.

U. S. P. Conference on Hyaluronidase.—An open conference will be held at 10 a. m. February 15 at the Pharmacopeia Building, 46 Park Avenue, New York, on the pharmaceutical aspects of hyaluronidase. The conference will take up various problems concerned with the assay of hyaluronidase and with the standards for strength, quality, and purity to appear in U. S. P. XV, as well as the preparation of a U. S. P. Reference Standard. Interested parties are invited. To make adequate preparations for the conference, the U. S. P. office, 46 Park Ave., New York 16, will appreciate being informed as to the number planning to attend.

Mexican Border Public Health Meeting.—The tenth annual meeting of the United States-Mexico Border Public Health Association will be held in Monterrey, Nuevo Leon, Mexico, on March 17-20. Dr. Wilton L. Halverson of San Francisco is the president and Dr. Salvador Molina Velez of Monterrey, president-elect. This year's program will include symposiums on poliomyelitis and industrial hygiene. Public health problems of particular interest to the border area will be discussed in section meetings on tuberculosis, public health nursing, maternal and child health, sanitation, preventive medicine, and veterinary public health.

Electroencephalography Meeting.—The Western Society of Electroencephalography will meet at the Del Monte Lodge in Pebble Beach, Calif., March 2-3 under the presidency of Dr. Henry W. Newman, San Francisco. With the exception of one by Dr. John R. Green of Phoenix, all scientific papers will be presented by California physicians. The subjects include "The Electroencephalograph in Acute Alcoholic Intoxication," "Changes in the Electrical Activity of the Hypothalamus Induced by Stress Stimuli," "Electroencephalography in the Parents of Epileptics," "An Electroencephalographic Study of Stuttering," and "Electroencephalographic Findings on 21 Cases of Sexual Psychopaths." The banquet will be held at 7:30 p. m. March 2.

Teachers Conference in Clinical Radiology.—The annual Conference of Teachers of Clinical Radiology will meet February 9 at the Palmer House in Chicago. The morning panel discussion will deal with the teaching of radiation therapy to the radiological resident. Dr. Earl E. Barth, Chicago, will serve as moderator, and the subject will be introduced by Drs. Charles L. Martin, Dallas; Hugh F. Hare, Boston, and Earl R. Miller, San Francisco. Dr. W. Edward Chamberlain, Philadelphia, will serve as moderator at an afternoon discussion of "What the Preceptor Should Teach His Young Colleague or Resident About Ethics and Administration." The annual presidential address will be given following the luncheon by Dr. Robert R. Newell, San Francisco, president of the American College of Radiology.

International Union Against Tuberculosis.—The 12th conference of this group is to be held in Rio de Janeiro, Brazil, August 24-27. Papers to be presented include the following:

J. Burns Amberson, New York, Treatment and Prognosis in Minimal Pulmonary Tuberculosis.
Arvid Wallgren, Sweden, Immunity and Tuberculosis.
Fernando Gomez, Uruguay, Organization and Results in Regard to the Tuberculosis Campaign of Mass Surveys.

Prof. Manoel de Abreu of Rio de Janiero, president of the union, will preside at the conference, the first since the Copenhagen conference in 1950. Prof. Etienne Bernard of Paris is secretary-general. The scientific sessions will be preceded by meetings of the union's executive committee and council. Representatives on the council from the United States include Dr. James E. Perkins, New York, managing director, and Dr. Esmond R. Long, director of medical research, National Tuberculosis Association; Dr. Gilberto S. Pesquera of New York City; Dr. Herbert L. Mantz of Kansas City, Mo., and Dr. David T. Smith of Durham, N. C. Frederick D. Hopkins, Ph.B., former executive secretary of the National Tuberculosis Association, will also attend the conference.

Awards in Medical Journalism.—The Albert and Mary Lasker Foundation has announced the third annual Lasker Awards for Medical Journalism. All newspapermen and magazine writers who have written medical or health articles during 1951 are eligible to compete. The deadline for entries is March 15. The awards consist of $500 each and a statuette of the Winged Victory of Samothrace, symbolizing in this instance victory over death and disease. They will be presented to the newspaper and magazine writers who have written the best articles, series of articles, editorials, or columns dealing with improvement of public health or prolongation of life through medical research or public health programs. The Nieman Foundation for Journalism at Harvard University will administer the awards. The foundation seeks especially to foster journalism that contributed to a better public understanding of medical research and health programs relating to the diseases that are major causes of death or disability, especially heart diseases, cancer, mental illnesses, arthritis, blindness, and neurological diseases. Entries may be made either by individual writers, editors, or by readers of newspapers and magazines. As many entries as desired may be made, provided articles have been published in a newspaper or magazine dated during the calendar year 1951. Entries should be forwarded to the Nieman Foundation for Journalism, 44 Holyoke House, Cambridge 38, Mass., not later than March 15. The awards will be presented at the annual dinner meeting of the National Association of Science Writers in Chicago, June 10.

FOREIGN

Large Meningitis Epidemic in Africa.—According to the *New York Times*, the World Health Organization has reported an epidemic of cerebrospinal meningitis in regions south of the African desert belt. In the Anglo-Egyptian Sudan there were 51,296 cases with 6,877 deaths during the first half of 1951.

Course in Pediatrics.—The Chair of Pediatrics and Child Care of the University of Santiago de Compostela and the Departmental School of Child Care of Galicia, Spain, is presenting three postgraduate courses for general physicians at the university. The first was held February 11-16 on diagnosis and treatment of the most frequent illnesses of childhood. The second course on tuberculous meningitis will be given March 10-15. The fee for enrollment is 200 pesetas payable before March 1. The third course, entitled "Extension of Pediatrics and Child Care," will be held May 12-24. In addition to Spanish professors, there will be Prof. Fanconi of Zurich, Wallgren of Stockholm, Bamatter of Geneva, Lemoine of Paris, and Guassardo of Turin. Enrolment fee is 750 pesetas. For information address the Clinic of Pediatrics, Courses for Postgraduates, Faculty of Medicine of Santiago de Compostela, Spain.

International Venereal-Disease Control Center.—The first international model center for venereal-disease control among seamen opened in Rotterdam December 21. The center will provide facilities for study and demonstration of recently-developed techniques of venereal disease control, with particular concern for problems of seafarers. Short training courses will be set up for medical officers, nurses, laboratory technicians, and medical social workers from many countries. Study groups will be assigned to investigate various problems of maritime venereal disease control. The World Health Organization will provide the necessary technical personnel, fellowships for training courses, and some materials. The Netherlands will make available the facilities of a special polyclinic in the Rotterdam Maritime Health Center. Rotterdam has been chosen as the site for this first international port demonstration project because it is the largest European port of reception for overseas shipping as well as the terminus for most shipping coming up the Rhine River from as far inland as Basel, Switzerland. The project will also serve as a technical center for the recently organized Rhine River Anti-Venereal-Disease Commission. The new center will be under the general direction of Dr. E. H. Hermans, director of the Maritime Health Center.

MEETINGS

American Academy of Allergy, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Forensic Sciences, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of General Practice, Atlantic City, N. J., March 24-27. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

American Association of Anatomists, Providence, R. I., March 19-21. Dr. Normand L. Hoerr, 2109 Adelbert Road, Cleveland 6, Secretary.

American Association of Railway Surgeons, Drake Hotel, Chicago, April 1-3. Dr. Chester C. Guy, 5800 Stony Island Ave., Chicago 37, Secretary.

American Congress on Obstetrics and Gynecology, Netherlands-Plaza Hotel, Cincinnati, March 31-April 4. Dr. Luella E. Nadelhoffer, 116 South Michigan Ave., Chicago 3, Secretary.

American Psychosomatic Society, Chicago, March 29-30. Dr. Sydney G. Margolin, 714 Madison Ave., New York 21, New York, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

Central Surgical Association, Toronto, Can., March 6-8. Dr. James T. Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St., Chicago 1, Secretary.

Michigan Clinical Institute, Book-Cadillac Hotel, Detroit, March 12-14. Dr. H. G. Cummings, 606 Townsend St., Lansing 15, Chairman.

Missouri State Medical Association, St. Louis, March 30-April 2. Dr. H. E. Petersen, 634 North Grand Blvd., St. Louis 3, Secretary.

National Conference on Medical Service, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., Secretary.

National Conference on Rural Health, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

New Orleans Graduate Medical Assembly, Municipal Auditorium, New Orleans, March 10-13. Dr. Woodward D. Beacham, 1430 Tulane Ave., Room 105, New Orleans 12, Secretary.

North Pacific Society of Internal Medicine, Portland, Ore., March 22. Dr. R. L. King, 1115 Terry Ave., Seattle 1, Secretary.

Sectional Meetings, American College of Surgeons:
- Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.
- Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.
- Minneapolis, Radisson Hotel, March 24-26. Dr. Harvey Nelson, 78 South 9th St., Minneapolis 2, Chairman.
- Vancouver, B. C., Vancouver Hotel, March 31-April 4. Dr. J. Russell Neilson, 925 West Georgia St., Vancouver, B. C., Chairman.

Southeastern Allergy Association, Augusta, Ga., March 21-22. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

Southeastern Section, American Urological Association, Boca Raton, Fla., April 2-5. Dr. Russell B. Carson, Sweet Bldg., Fort Lauderdale, Fla., Secretary.

Southeastern Surgical Congress, Atlanta, Ga., March 10-13. Dr. Benjamin J. Beasley, 701 Hurt Bldg., Atlanta 3, Ga., Secretary.

Southwest Allergy Forum, Hotel Baker, Dallas, Texas, March 2-4 Dr. James Holman, Medical Arts Bldg., Dallas, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

United States-Mexico Border Public Health Association, Monterrey, Nuevo Leon, Mexico, March 17-19. Dr. J. C. Ellington, 314 U. S. Court House, El Paso, Texas, Secretary.

Western Society of Electro-Encephalography, Del Monte Lodge, Pebble Beach, Calif., March 2-3. Dr. Nicholas A. Bercel, 450 North Bedford Drive, Beverly Hills, Calif., Secretary.

INTERNATIONAL

Australasian Medical Congress, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

Congress of the International Diabetes Federation, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands, Secretary.

European Society of Cardiovascular Surgery, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

Interamerican Cardiological Congress, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

Inter-American Congress of Public Health, Havana, Cuba, Sept. 27-Oct. 1. Pan-American Sanitary Bureau, 2001 Connecticut Ave., Washington, D. C.

Inter-American Congress of Radiology, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

International College of Surgeons, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

International Congress of Comparative Pathology, Madrid, Spain, May 4-11. Prof. Carda-Aparici, Calle Fernando V1.8, Madrid, Spain, Secretary.

International Congress of Dermatology and Syphilology, London, England, July 21-26. Dr. Gordon B. Mitchell-Heggs, 5, Lisle St., London, W.C.2, England, General Secretary.

International Congress on Diabetes, Leyden, The Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands.

International Congress of Haematology, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

International Congress of Health Technicians, Palais de la Mutualite, Paris, France, June 9-14. Secretariat General, 6 Square Desaix, Paris XV^e, France.

International Congress of Internal Medicine, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

International Congress of Legal and Social Medicine, Berne, Switzerland, April 15-18. Prof. J. Dettling, 20, Buhlstrasse, Berne, Switzerland.

International Congress on Neuropathology, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

International Congress of Oto-neuro-ophthalmology, Lisbon, Portugal, April 22-26. Prof. Diogo Furtado, Servico de Neurologia, Hospital dos Capuchos, Lisbon, Portugal, General Secretary.

International Congress of Physical Medicine, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

International Congress for Thermalism and Climatothalassotherapy, Nice-Cannes, France, April 3-8.

International Union Against Tuberculosis, Rio de Janeiro, Brazil, Aug. 24-27. Prof. Etienne Bernard, 66 Blvd. St. Michel, Paris 6e, France, Secretary-General.

International Society of Geographic Pathology, Liège, Belgium, July 15-18. Dr. Fred C. Roulet, Habelstr. 24, Basel, Switzerland, Secretary General.

Latin American Congress of Physical Medicine, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

Neuroradiologic Symposium, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

Pan-American Congress of Gastroenterology, Mexico City, D.F., May 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico City, D.F., Secretary.

Pan-European Congress of Gastroenterology, Bologna, Florence and Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Orsola, Bologna, Italy, Secretary.

World Medical Association, Athens, Greece, Oct. 12-16. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary General

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 24-26, 1952. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery 4.

Alaska:* *Examination.* Juneau, March 4. Also on application in other towns where there are board members. *Reciprocity.* On application. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

Arizona:* *Examination.* Phoenix, April 15-17. *Reciprocity.* Phoenix, April 19. Sec., Dr. J. H. Patterson, 316 W. McDowell St., Phoenix.

Arkansas:* *Examination. Regular.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Little Rock, June 10-11. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 5-6. Sec., Dr. Frank C. Smith, 2301 Broadway, Little Rock.

California: *Written.* Los Angeles, Feb. 18-21; San Francisco, June 23-26; Los Angeles, Aug. 18-21; Sacramento, Oct. 20-23. Application must be received at least two weeks prior to date of examination. *Oral for Reciprocity Applicants.* Los Angeles, Feb. 16; San Francisco, June 21; Los Angeles, Aug. 16; San Francisco, Nov. 8. Applicants are requested not to arrange to come to an oral examination until they receive notice from the Credentials Committee. *Oral and Clinical for Foreign Medical School Graduates.* Los Angeles, Feb. 17; San Francisco, June 22; Los Angeles, Aug. 17; San Francisco, Nov. 9. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

Colorado:* *Examination.* Denver, June 10-12. Final date for filing application is May 12. *Reciprocity.* Denver, April 8. Final date for filing application is Mar. 10. Sec., Dr. Samuel H. Brown, 831 Republic Bldg., Denver.

Connecticut:* *Regular Examination.* Hartford, March 11-12. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic Examination.* Derby, March 11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

Delaware: Dover, July 8-10. Sec., Dr. Joseph S. McDaniel, 229 South State St., Dover.

District of Columbia:* *Reciprocity.* Washington, March 10. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

Florida:* *Examination.* Jacksonville, June 29-July 1. Sec., Dr. Homer L. Pearson, 701 Dupont Bldg., Miami.

Georgia: Atlanta and Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capital, Atlanta 3.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John K. Battenfield, Agana.

Idaho: Boise, July 14-16. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

Illionos: *Examination.* Chicago, April 1-3, June 24-26 and Oct. 7-9. Supt. of Regis., Mr. Charles F. Kervin, Capitol Bldg., Springfield.

Indiana: Indianapolis, June 1952. Sec., Dr. Paul R. Tindall, 1138 K of P Bldg., Indianapolis 4.

Iowa:* *Examination.* Iowa City, June 9-11. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Kansas City, June 4-5. Sec., Dr. O. W. Davidson, 864 New Brotherhood Bldg., Kansas City.

Kentucky: *Examination.* Louisville, June 4-6. Sec., Dr. Bruce Underwood, 620 S. Third St., Louisville.

Maine: Portland, March 11-12. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Maryland: *Examination.* Baltimore, June 17-20. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

Michigan:* *Examination.* June. Sec., Dr. J. E. McIntyre, 100 W. Allegan St., Lansing 8.

Minnesota: Minneapolis, April 15-17. Sec., Dr. Julian F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: *Examination.* Jefferson City, Feb. 19-21. *Reciprocity.* Jefferson City, Feb. 11. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

Montana: Helena, April 1. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

New Hampshire: Concord, March 12-13. Sec., Dr. John S. Wheeler, State House, Concord.

New Jersey: *Examination.* Trenton, June 17-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico:* Santa Fe, April 14-15. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

North Carolina: *Reciprocity.* Pinehurst, May 5. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

North Dakota: *Examination.* Grand Forks, July 9-11. *Reciprocity.* Grand Forks, July 12. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* Columbus, June 17-20. *Reciprocity.* Columbus, April 1. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

Oklahoma:* *Examination.* Oklahoma City, June 4-5. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon:* *Reciprocity.* Portland, April 18-19. *Examination.* Portland, July. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

Puerto Rico: *Examination.* San Juan, March 4. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

Rhode Island:* *Examination.* Providence, April 3-4. Sec., Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

South Carolina: *Reciprocity.* Columbia, March 3 and April 7. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota:* Rapid City, July 15. Sec., Dr. C. B. McVay, Yankton Clinic, Yankton.

Tennessee:* *Examination.* Memphis, March 26-27. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

Texas: Fort Worth, June 19-21. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth.

Utah: *Examination.* Salt Lake City, July. Asst. Dir., Mr. Frank E. Lees, 314 State Capitol Bldg., Salt Lake City 1.

Virginia: *Examination.* Richmond, June 12-14. *Reciprocity.* Richmond, June 11. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

Virgin Islands: St. Thomas, June 4-5. Sec., Dr. Earle M. Rice, St. Thomas.

West Virginia: Charleston, April 7-8. Sec., Dr. H. H. Dyer, State Office Bldg. No. 3, Charleston 5.

Washington: Seattle, July. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination. On application. Juneau or other towns in Territory* as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arizona: Tucson, March 18. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

Colorado: Denver, March 5-6. *Examination.* Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

District of Columbia: *Examination.* Washington, April 21-22. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington, D. C.

Florida: Gainesville, June 7. *Examination.* Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

Oklahoma: *Examination.* Oklahoma, April 14. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, March 1, June 7, Sept. 6 and Dec. 6. Sec., Dr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

Rhode Island: Providence, Feb. 13. *Examination.* Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Tennessee: *Examination.* Memphis and Nashville, March 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Texas: Austin, April. *Examination.* Sec., Bro. Raphael Wilson, 306 Nalle Bldg., Austin.

Wisconsin: *Examination.* Madison, April 5, and Milwaukee, June 7. Sec., Mr. W. H. Barber, Ripon College, Ripon.

---

* Basic Science Certificate required.

DEATHS

Edgar Erskine Hume, Major General, MC, U. S. A. (retired), until recently chief surgeon of the Far East Command, died in Walter Reed Hospital, Washington, D. C., January 25, aged 62, of dissecting aneurysm of the abdominal aorta. General Hume was born in Frankfort, Ky., Dec. 26, 1889, graduated from Centre College, Ky., in 1908, and took his medical degree at Johns Hopkins University, Baltimore, in 1913. He studied public health and tropical medicine at Harvard and Massachusetts Institute of Technology, and graduated from the Infantry School in 1924; from the Infantry School Advanced Course in 1932; from the Army Command and General Staff School in 1936, and from the Army War College in 1938. He was certified by the American Boards of Psychiatry and Neurology and Internal Medicine.

General Hume joined the regular Army Medical Corps in 1916, was an honor graduate of the Army Medical School in 1917, then became executive officer of the Division of Sanitation in the Surgeon General's Office. He was soon sent overseas, was later in command of all United States hospitals in Italy, served with the British Expeditionary Forces in 1918, and served on the Western Front during the Meuse-Argonne and Saint Mihiel offensives. After the war he was chief medical officer and head of the American Red Cross staff in Serbia, where he successfully combated a typhus epidemic and received his first Distinguished Service Medal. He directed refugee operations in the Baltic countries. Returning to the United States in 1920, General Hume was assigned to the Army Laboratory for New England in Boston and held various other assignments prior to World War II. He was editor of the *Index Catalog*, Army Medical Library, Washington, D. C., 1922-1926; medical inspector of the Infantry School at Fort Benning, Ga., 1926-1930; inspector for the Massachusetts and New Hampshire National Guards 1930-1932; librarian for the Army Medical Library 1932-1936; director of administration, Medical Field Service School, Carlisle, Pa., 1937-1942, and commanding officer at Winter General Hospital in Topeka, Kan., the following year. Early in World War II he was assigned to the General Staff Corps in North Africa for military government planning of the invasion of Sicily and Italy. He became chief of public health in Sicily and chief of Allied Military Government of the Fifth Army in the Mediterranean theatre, heading successively military governments in Naples, where he halted a typhus epidemic, in Milan, Rome, Florence, and other major Italian cities. He remained in Europe as chief of the Military Government of the U. S. Zone in Austria from 1945-1947 when he became chief of the orientation branch, Department of the Army. In 1948 he was promoted to the rank of brigadier general and to major general in 1949. General Hume went to Tokyo in July, 1949, as chief surgeon of the Far East Command and subsequently was appointed to the additional post of surgeon of the United Nations Command in Korea. He returned to the U. S. last November and retired December 31.

General Hume was one of the most decorated medical officers in United States history. He had been awarded two Distinguished Service Medals, the Silver Star with two clusters, the Legion of Merit, the Soldier's Medal, Army Bronze Stars, a Navy Bronze Star, the Purple Heart, and the Bali Grand Cross of the Sovereign Military Order of Malta. He had received the U. S. Typhus Medal, the Sir Henry Wellcome Prize (1933), the Founder's Medal of the Association of Military Surgeons, 1941, the Aztec Eagle for services and work on military medicine in 1943, and the Gorgas Medal in 1948. He was the Army delegate and national correspondent to the International Congress of Military Medicine in Paris in 1925 and to nine other meetings of the congress. General Hume had degrees and honors from various universities in the United States and in eight foreign countries. He held decorations from 37 countries in Europe and Latin America, was a lecturer in medical history at Georgetown University and the University of Kansas, was an honorary prof [illegible] University of Warsaw, honorary colonel of the Royal Serbian Army, and honorary citizen of 40 Italian and Austrian cities. He was a fellow of the American Academy of Arts and Sciences, the Royal Society of Edinburgh, Royal Society of Tropical Medicine and Hygiene, American College of Surgeons, American College of Physicians, and the American Public Health Association. His memberships in societies included the American Medical Association, Royal Italian Society of Hygiene, Society of Antiquaries of Scotland, academies of science of Spain, Mexico and Philadelphia, and the academies of medicine in Rome and Washington. He was secretary (1923-1924) and president (1947-1948) of the Association of Military Surgeons of the United States. At one time he was editor of *The Military Surgeon* and an associate editor of the *Annals of Medical History*. General Hume was a member of many other clubs and societies in this country and abroad, including the Society of Cincinnati (vice-president-general 1951), Aztec Club, of which he was president, and Delta Omega (founder and national president in 1926). He was the author of many books and papers including the "Medical Book of Merit," "Victories of Army Medicine," and was a contributor to the Encyclopedia Britannica, Encyclopedia Americana, "Tice's Practice of Medicine," and the "Dictionary of American Biography."

Farrell, LeRoy Francis ⊕ Captain, U. S. Navy, retired, Santa Monica, Calif.; Tufts College Medical School, Boston, 1925; commissioned a lieutenant (j.g.) in the medical corps of the regular Navy on June 4, 1925, and was assigned to the Naval Hospital, Boston, for his internship; attained the rank of captain on May 15, 1943; served at various Naval hospitals ashore and aboard ships of the fleet and at Asiatic stations; served as executive officer of the Naval Hospital, Aiea Heights, T. H., Corpus Christi, Texas and Quantico, Va.; in 1948 was a staff member of the U. S. Naval Advisory Group, Survey Board, Nanking, China; served at the Naval Hospital and Naval Dispensary, Washington, D. C., from September, 1940, until December, 1941, when he was transferred to the Naval Ammunition Depot, Burns City, Ind.; after prolonged illness was placed on the retired list on Aug. 1, 1950; died November 29, aged 50.

Dockery, Earl Edward ⊕ Medical Director, Captain, U. S. Navy, retired, Norfolk, Va.; born at Fond du Lac, Wis., Jan. 24, 1891; Chicago College of Medicine and Surgery, 1917; enrolled in the medical corps of the U. S. Naval Reserve as a lieutenant (j.g.) on March 2, 1918 and was commissioned in the regular Navy Medical Corps in September, 1919; served at various Naval hospitals ashore and aboard ships of the fleet and at the Bureau of Medicine and Surgery, Washington, D. C., from April, 1942, until August, 1943, at which time he was transferred to the Naval Operating Base, Norfolk, Va.; retired Aug. 1, 1945; died in U. S. Naval Hospital, St. Albans, L. I., N. Y., November 26, aged 60, of myocardial infarction.

Adams, Charlie, Cordele, Ga.; Emory University School of Medicine, 1925; member of the American Medical Association; formerly a member of the city commission; past president of the Crisp County Chamber of Commerce; died November 2, aged 51.

Burkhardt, Charles Frederick, Biloxi, Miss.; Kentucky School of Medicine, Louisville, 1893; served during World War I; died in the Veterans Administration Center November 6, aged 83, of cerebral vascular accident.

Butterfield, Clifford Allen ⊕ Medford, Mass.; Tufts College Medical School, Boston, 1922; member of the board of health; served during World War I; on the staff of Lawrence Memorial Hospital; died in Lake Saboa, Burlington, Me., November 8, aged 59, in an airplane crash.

Curtis, George Nathaniel ⊕ Salt Lake City; Northwestern University Medical School, Chicago, 1913; past president and secretary of the Utah State Medical Association; served as director of the Salt Lake County C [illegible] er 20, aged 70, of coronary [illegible]

⊕ Indicates Fellow of the American Medical Association.

Dickerson, Lucian Brown, Clearwater, Fla.; Louisville (Ky.) Medical College, 1903; past president of the Pinellas County Medical Society; member of the American Medical Association; affiliated with Morton F. Plant Hospital; served during World War I; died in Homosassa Springs November 3, aged 75, of coronary occlusion.

Du Four, Emery Holmes, Chicago; University of Illinois College of Medicine, Chicago, 1914; died December 23, aged 69, of chronic myocarditis.

Eisenberg, Joseph Johns ⊕ Milwaukee; George Washington University School of Medicine, Washington, D. C., 1914; also a graduate in pharmacy; served during World War I; police surgeon; affiliated with St. Joseph's, Mount Sinai, and West Side hospitals; died November 11, aged 61, of coronary thrombosis.

Gates, Adam John ⊕ Tigerton, Wis.; Northwestern University Medical School, Chicago, 1905; an Associate Fellow of the American Medical Association; served during World War I; formerly member of the state board of medical examiners; for many years village president; member of the board of education; died in the Veterans Administration Hospital, Wood, November 5, aged 74, of arteriosclerosis.

Hall, James Lafayette ⊕ Vicksburg, Miss.; University of Tennessee College of Medicine, Memphis, 1936; served overseas during World War II; on the staff of the Lutheran Hospital; died November 17, aged 44, of carcinoma of the lung.

Harlan, Delly Lee ⊕ Clarence, Mo.; Washington University School of Medicine, St. Louis, 1925; served during World War I; member of the school board; affiliated with Samaritan Hospital in Macon, where he died November 12, aged 53, of cardiorenal vascular disease.

Harris, Harry George, Los Angeles; Detroit College of Medicine, 1904; died November 10, aged 70, of coronary thrombosis.

Irwin, George Howard, Lodi, Wis.; Rush Medical College, Chicago, 1888; member of the American Medical Association; for many years health officer for the villages of Lodi and Okee and the townships of Lodi and West Point; died November 6, aged 83, of heart disease.

Kewer, Leo Thorne, Westwood, Mass.; Tufts College Medical School, Boston, 1913; member of the New England Society of Psychiatry; served overseas during World War I; formerly associated with the Veterans Administration; died in the Norwood (Mass.) Hospital November 24, aged 63, of acute coronary disease.

Knowles, Roy Frank, Brentwood, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1915; member of the American Medical Association; at one time health officer of Phelps County in Rolla; formerly associated with the U. S. Public Health Service Reserve; died November 7, aged 61, of cerebral hemorrhage.

Lee, Joshua Mordecai, Denver; Boston University School of Medicine, 1923; also a graduate in pharmacy; member of the American Society of Physical Medicine, American Congress of Physical Medicine, and the Association of Military Surgeons of the United States; served overseas during World War II; for over four years chief of physical medicine and rehabilitation in the Veterans Administration; died November 30, aged 57, of acute coronary thrombosis.

Levin, Alexander, Chicago; The General Medical College, Chicago, 1924; died November 25, aged 56, of cerebral hemorrhage.

Levy, Maurice ⊕ Denver; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1912; member of the American Trudeau Society; on the staff of Mercy Hospital, where he died November 14, aged 61, of coronary disease.

Lewis, Thomas Arthur, St. Louis; Meharry Medical College, Nashville, Tenn., 1914; died in Homer G. Phillips Hospital November 11, aged 67, of pulmonary tuberculosis.

L'Hommedieu, Harold Calvin, Port Washington, N. Y.; Long Island College of Medicine, Brooklyn, 1940; member of the American Medical Association; certified by the National Board of Medical Examiners; served overseas during World War II; affiliated with Nassau Hospital in Mineola; died in Manhasset (N. Y.) Medical Center Hospital November 18, aged 36, of coronary occlusion.

Lippincott, George Coote ⊕ Lieutenant, U. S. Navy, retired, Salem, N. J.; Jefferson Medical College of Philadelphia, 1875; also a graduate in pharmacy; entered the U. S. Navy on Sept. 28, 1875, and retired December, 1886, because of incapacity resulting from an incident of service; died November 21, aged 101.

Lucas, Arganey L'Avnire ⊕ Chicago, Meharry Medical College, Nashville, Tenn., 1911; on the staff of the Provident Hospital; past president of the Meharry Alumni Association; died December 16, aged 63, of bronchogenic carcinoma.

Lynn, Isaac Wesley, Desert Hot Springs, Calif.; Trinity Medical College, Toronto, Ont., Canada, 1904; member of the American Medical Association; died November 16, aged 80, of a heart attack.

McEwen, Mary Gilruth ⊕ Evanston, Ill.; Northwestern University Woman's Medical School, Chicago, 1898; an Associate Fellow of the American Medical Association; fellow of the American College of Surgeons; formerly professor of clinical gynecology at the University of Illinois College of Medicine; affiliated with St. Francis Hospital; in 1914 was made chairman of social hygiene of the General Federation of Women's Clubs; died November 28, aged 79, of cerebral thrombosis and pneumonia.

McGoldrick, Lynn Pope, Salt Lake City; University of Illinois College of Medicine, Chicago, 1931; died November 24, aged 49.

Maercklein, Otis William Charles, Milwaukee; Marquette University School of Medicine, Milwaukee, 1917; member of the American Medical Association and the Industrial Medical Association; died in Milwaukee Sanitarium, Wauwatosa, November 6, aged 61, of arteriosclerotic heart disease, cerebral arteriosclerosis, and pneumonia.

Marks, Joseph Millard, Valley Falls, Kan.; University Medical College of Kansas City, Mo., 1906; member of the American Medical Association; past president of the Jefferson County Medical Society; for many years county health officer; served in France during World War I; affiliated with St. Francis Hospital in Topeka; died in Research Hospital, Kansas City, Mo., November 3, aged 69, of leukemia.

Masterton, Edward Lincoln ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1923; served during World War I; on the staff of South Shore Hospital and Illinois Central Hospital, where he died December 10, aged 55, of cerebral hemorrhage and hypertension.

Mavity, David Everett Hunt, Fowler, Ind.; Gross Medical College, Denver, 1892; member of the American Medical Association; honorary president of the Benton County Tuberculosis Association, which he organized in 1912; served as county health officer; died in St. Elizabeth Hospital, Lafayette, November 16, aged 71, following fracture of the left femur as the result of a fall, and carcinoma of the bowel with liver involvement.

May, Henry Francis, Chicago; Chicago College of Medicine and Surgery, 1917; died in St. Anthony de Padua Hospital November 26, aged 72, of cerebral vascular accident and arteriosclerosis.

Rhymes, Ray Lewis ⊕ Meridian, Miss.; Emory University School of Medicine, Atlanta, 1933; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; on the staff of Riley's Hospital, where he died November 28, aged 41, of coronary occlusion.

DIED WHILE IN MILITARY SERVICE

Hooker, Edgar Frank ⊕ Commander, U. S. Navy, Philadelphia; Temple University School of Medicine, Philadelphia, 1929; specialist certified by the American Board of Otolaryngology; served during World War II; later entered the medical corps of the regular Navy; medical officer in charge of veterans outpatient service, U. S. Naval Hospital, where he died October 8, aged 51, of cerebral hemorrhage and arteriolar nephrosclerosis.

GOVERNMENT SERVICES

ARMY

Orientation Conferences for Reserve Officers.—The Second Army Surgeon, Brig. Gen. Alvin L. Gorby, and a group of specialists will conduct a series of orientation conferences for Army Medical Service reserve officers in the Second Army area during March, 1952. Following previous policy the Second Army is taking the orientation conferences to the field so as not to infringe on the professional time of medical reserve officers by calling them to Army headquarters. A further convenience is that they are being held on weekends, with a starting time of 1:30 p. m. The itinerary is as follows: Cleveland, March 15; Cincinnati, March 16; Philadelphia, March 22; Richmond, Va., March 23; Pittsburgh, March 29; and Baltimore, March 30. The agenda includes:

Current Status of the Army Medical Service Reserve Program, Col. James B. Mason, MC, special assistant to the Surgeon General.

Strategic Intelligence and World Affairs, G-2 representative, Headquarters Second Army.

The Army Medical Service in Retrospect, Brig. Gen. Alvin L. Gorby, Surgeon, Headquarters Second Army.

Some Recent Advances in Army Medical Research, representative, Medical Research and Development Board, Surgeon General's Office.

One hour of the agenda has been set aside in order that the Army Medical Service reserve officers may hold separate corps meetings. As has been customary in previous conferences, a social hour and dinner are included in the agenda. The meetings will begin promptly at 1:30 p. m. Officers should arrive early in order to finish registration prior to the opening of the session. The orientation conference will close promptly at 9 p. m.

Visit to Facilities in Panama and Puerto Rico.—Brig. Gen. Silas B. Hays, deputy Surgeon General, and Col. Robert L. Black, chief of the medical service corps, left Washington Jan. 28 on an inspection tour in the Panama Canal Zone and Puerto Rico. Both visitors gave special attention to mosquito control and other environmental sanitation measures recently adopted by health authorities in the Canal Zone following reports of jungle yellow fever in nearby Nicaragua, Costa Rica, and Panama. To date, Army and civilian personnel in the Canal Zone have been free of the disease, but authorities are studying new means of combating any outbreak should yellow fever be introduced among Americans in the area.

NAVY

Course in Special Weapons and Radioactive Isotopes on West Coast.—The first course of instruction in medical aspects of special weapons and radioactive isotopes, under the auspices of the Navy's Bureau of Medicine and Surgery, to be given on the west coast, will convene at the Naval Station, Treasure Island, San Francisco, on March 3, 1952. The course will provide inactive reserve medical officers who reside in the 11th, 12th, and 13th Naval Districts, information and techniques that are not available to them as civilians. A similar course has been carried out at the Naval Medical School, Bethesda, Md., during the past three years. Problems likely to be confronted by medical and dental officers in the field of radioactivity will be presented, and techniques employed to counteract these problems will be discussed.

Inactive reserve medical, dental, medical service, nurse corps, and hospital corps officers residing in the 11th, 12th, and 13th Naval Districts who desire to attend this course should submit their request for the six-day training duty to the commandant's office of their respective naval districts at an early date. The acceptance of orders to attend this course of instruction will not, in any way, increase the possibility of involuntary recall to active duty of the personnel concerned.

Award Legion of Merit to Dr. Charles Geschickter.—Dr. Charles F. Geschickter, commander, Medical Corps, U. S. Naval Reserve, has been awarded the Legion of Merit by the President "for exceptionally meritorious conduct in the performance of outstanding services to the Government of the United States during and subsequent to World War II. Recognizing the need by the medical profession for a reference book in pathology while serving as Director of the Department of Pathology in the Naval Medical School, Bethesda, Md., in 1944, Commander Geschickter assumed the responsibility of undertaking this work. He alone wrote the text and gave unstintingly of his time in editing material for the 'Color Atlas of Pathology.' Commander Geschickter has thus contributed essentially to the advancement of medical science and brought distinguished credit to the United States Navy. His meticulous attention to detail, administrative ability, and devotion to the creation and publication of this work reflect the highest credit on Commander Geschickter and the United States Naval Service."

Award Bronze Star to Lt. Neal D. Sanborn.—Lt. Neal D. Sanborn, MC, was presented the Bronze Star with Combat "V" January 16, at the Naval School of Aviation Medicine, Pensacola, Fla. He was cited for heroic achievement in connection with operations against the enemy while serving with a Marine artillery battalion in Korea on July 21, 1951. Serving as battalion surgeon, he displayed outstanding courage and professional skill. When the battalion was subjected to intense enemy artillery and mortar fire, he fearlessly moved from position to position treating casualties and carrying them to positions of comparative safety. He refused to seek safety for himself until all wounded had been rendered aid. His bravery and coolness under fire were an inspiration to all who observed him, and his great professional ability was responsible for saving of many lives. Lieutenant Sanborn's heroic actions were in keeping with the highest traditions of the United States Naval Service. Lieutenant Sanborn is presently undergoing training in aviation medicine that will lead to designation as a Naval Flight Surgeon.

PUBLIC HEALTH SERVICE

Dr. R. R. Spencer Retires.—Dr. R. R. Spencer retired on January 31, after 37 years of service in the Commissioned Corps of the Public Health Service. Dr. Spencer's career has been marked by many achievements, probably the most notable being his part in the development, with the late Dr. R. R. Parker, of a vaccine against Rocky Mountain spotted fever in 1922. The successful development of a vaccine against the disease was a great step forward in the control of infectious diseases and a boon to the populations of tick-infested areas. In 1930 Dr. Spencer's exhibit on Rocky Mountain spotted fever won the American Medical Association's gold medal at its convention in Detroit.

Dr. Spencer has devoted more than a third of his career to the field of cancer. Detailed to the National Cancer Institute soon after its creation in 1937, he served first as executive assistant, then as assistant chief, and from 1943 to 1947 as director of the institute. In 1947 he was released from administrative duties to devote full time to cancer research and supervision of the institute's professional training program. In 1944 he was awarded the Clement Cleveland Medal for his work in cancer health education.

Dr. Spencer has accepted an appointment as a special lecturer in cancer to conduct seminars for physicians throughout the State of Virginia under the joint sponsorship of the State Medical Society, the Old Dominion Medical Society, the Virginia Division of the American Cancer Society, and the University of Virginia. He assumed his new duties on February 1, and will spend the first six weeks in New York City visiting cancer clinics and hospitals to observe the practical application of the newest developments in cancer diagnosis and treatment.

FOREIGN LETTERS

ITALY

National Convention of Internal Medicine.—The 52nd National Convention of Internal Medicine was held in Rome, Oct. 17 through 19, 1951, concurrently with the 53rd National Convention of the Italian Society of Surgery. Prof. Cesare Frugoni, director of the University of Rome Medical Clinic and chairman of the society, was also chairman of the organizing committee.

Obstructions of the Hepatic and Common Bile Ducts.—Hepatic and common bile duct obstructions were discussed jointly with the Society of Surgery. Professor Sotgiu, of the University of Bologna, discussed the medical point of view. Obstruction causes bile stasis; this leads to an increase in pressure, dilatation of the biliary passages, disturbances of the hepatic parenchyma, with regurgitation of bile and cholemia, followed by all the well-known biochemical and clinical alterations. The most important complications of obstruction of the biliary passages are infection of the biliary passages and pancreatic dysfunction. Symptoms of obstruction include the triad of pain, high temperature, and jaundice. Sometimes only two of the three aforementioned symptoms are present, and, in some instances, acute obstruction is monosymptomatic. There may also be concealed forms of incomplete chronic obstruction. The most important of these forms are painful obstruction without colic, dyspeptic obstruction, and pruriginous obstruction. The most important diagnostic procedures are duodenal catheterization, the secretin test, and the test with morphine, secretin, and sulfobromophthalein (bromsulphalein®) sodium, adopted in the Bologna clinic. Obstruction induced by true dyskinesia and inflammation can be cured without surgical intervention.

Diabetes.—Professor Antognetti, from the University of Genoa, and Professor Travia, from the University of Rome, discussed diabetes. Professor Antognetti explained the physiopathology and the clinicopathogenic aspects of the disease and summarized the latest studies and hypotheses regarding the intermediary metabolism of carbohydrates, fats, and proteins. He emphasized the complex and numerous endocrine-sympathetic influences on intermediary metabolism. The hypophysis represents an endocrine diabetogenic complex, but the adrenal cortex and the thyroid gland also contribute to the formation of the diabetogenic constellation. The pancreas, with its insulin secretion, prevails in the antidiabetogenic constellation, but the male sex hormones and the diencephalic centers also influence carbohydrate metabolism. Today, diabetes is considered a morbid syndrome in which the equilibrium between the diabetogenic and antidiabetogenic complexes is altered.

Professor Travia discussed diagnosis, prognosis, and treatment of diabetes and diabetic coma. There are about 54,000 diabetics in Italy, and a similar number of persons have diabetes without knowing it. Diagnosis of diabetes rests mainly on laboratory tests, glycemia, glycosuria, and glycemic curves. Coma is still considered the severest complication of diabetes; before the advent of insulin, it was the primary cause of death among diabetics. Acidosis is another important complication, and arteriosclerotic phenomena may also occur. The prognosis of diabetes has improved greatly since insulin was discovered, and the average life expectancy, which was 44.6 years in 1914, is today 64.5 years. A balanced diet is of great importance in the treatment of diabetes and should contain carbohydrates 41.9%, fats 47.6%, and proteins 10.5%, with the addition of complementary factors, such as vitamins and salts. Another important factor in therapy is insulin administration, the average dose being 30 to 40 units daily. A mixture of slow acting insulin and regular insulin is now used. For patients with diabetic coma, modern authors suggest large doses of insulin (100 units) to be repeated after several hours if necessary.

PARIS

Fourteenth Congress of the International Society of Surgery.—The 14th Congress of the International Society of Surgery took place Sept. 23-29, 1951, at the Sorbonne and the Paris Faculty of Medicine, under the presidency of Prof. R. Leriche, assisted by Drs. Brando-Filho (Rio de Janeiro), C. Crafoord (Stockholm), R. Danis (Brussels), and D. P. Phemister (Chicago), who served as vice-presidents. This meeting coincided with the 50th anniversary of the International Society of Surgery. Over 800 delegates, representing most of the countries of the world, and more than 1,500 members were present. At the opening meeting, Professor Maccas (Athens) spoke on behalf of the foreign delegates. Professor Hartmann, doyen of the French surgeons, eulogized Ver Hoogen, president of the association, and Grey Turner, who presided over the last meeting. The scientific meetings included 11 reports, followed by discussions, and nearly 80 individual communications, which were simultaneously translated into French, English, and Spanish and heard through individual receivers.

Portal Hypertension.—A. H. Blakemore (New York), in discussing portal hypertension, described early attempts to divert the portal circulation by direct or indirect anastomoses. D'Allaines, Lortat-Jacob, and Dubost (Paris) emphasized the difficulties of diagnosing portal hypertension and of interpreting the indications for an operation. Santi and Marion (Lyons) explained that their technique permitted the classification of their patients into three groups: those with hypertension due to alcoholic cirrhosis, those with obstruction in the portal system, and those with cirrhosis of unknown origin. Their results are satisfactory in Banti's syndrome, rather poor in hypertrophic cirrhosis, and unsatisfactory in ascites. Boerema (Amsterdam) stated that the portacaval shunt is indicated only in purely mechanical hypertension due to regional stenosis. He emphasized the danger of persistent hemorrhages of esophageal varices in case of failure. He showed good results obtained with his method of direct attack on these varices: ligation followed by sclerosing injections after temporary esophagostomy.

Vascular Grafts.—Rehn (Fribourg) discards heterografts, using largely venous autoplastic or homoplastic grafts (very young arterial fragments taken from corpses). From a biological, physiological, and morphological study of isolated vascular strips, the author concluded that the best preservation process consists in storing the transplant in blood renewed every fourth day. By this means, a transplant may be kept alive in the refrigerator for 19 days. During warming up, it must be placed in oxygenated Tyrode's solution or stored blood. Dubost and Economos (Paris) reported that the results of homografts in 16 patients were encouraging, especially in 10 cases of Fallot's tetralogy and 2 of coarctation of the aorta.

Artificial Circulation in Surgery of the Heart.—J. Jongblod (Utrecht) thinks that it is preferable to connect an artificial heart to an artificial lung, and he has built an apparatus insuring the circulation in coronary and bronchial arteries and the oxygenation of 4 liters of blood per minute. He was able to maintain artificial circulation in a dog for six hours almost without incident. The animal was killed six weeks later, and no alteration of the myocardium or of the nervous system was found. Kunlin (Paris) described his artificial heart-lung apparatus with which he obtained, in dogs, an output of 1,200 to 1,500 cc. per minute and a 38 minute survival before fibrillation occurred. Dogliotti (Turin) built an apparatus, which does not replace the heart-lung instrument, but which will relieve them in case of failure. One 50-year-old patient, near death during an intervention, was reanimated for 20 minutes, thereby permitting a favorable conclusion of the operation. Bigelow (Toronto) attempted to drain the right heart by progressive cooling; he obtained narcosis without an anesthetic, which allowed him to keep the heart of 39 dogs open and empty for 18 to 20 minutes. Of 139 dogs, 51% were reanimated, and 15% had prolonged survivals.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Films and Television.—Two consecutive series of 40 French and other films, mostly in color, were shown. Two types of television were presented: black and white, transmitted from Professor Mondor's surgical clinic at the Salpetrière Hospital, and color television, transmitted from the Boucicault Hospital in Professor Thalheimer's service.

The next International Congress of Surgery will be held in Lisbon at Easter in 1953 under the presidency of Reynaldo Dos Santos.

SWITZERLAND

First Congress of International Association of Allergists.—This congress was held in Zurich, Sept. 23-29, 1951, under the chairmanship of Dr. Loeffler, head of the medical clinic of Zurich University. There were 1,000 participants from over 30 countries. Dr. Schwarz, dean of the medical faculty of Zurich University, conferred the title of Doctor honoris causa on Dr. Rich, Baltimore, for his studies in experimental pathology, chiefly on tuberculosis, and on Dr. Hirszfeld, Wroclaw, for his research on blood groups in relation to genetics.

Reports covering many topics were read in various sections. These included diagnosis and therapy of allergic disorders, their frequency, and their economic and social influences. It was reported that disability due to asthma is as important economically as that caused by ulcers of the digestive tract. Asthma causes more loss of work than is caused by all fractures, and it causes about twice as much work loss as does tuberculosis. The geographical distribution of allergic diseases, including those caused by house dust, was analyzed. In the special section on histology of allergic lesions it was shown how alterations in immediate and delayed reactions can lead to necrotic reaction, anaphylactoid reaction, and, through hyalinoid granulomatosis, to amyloidosis. Histological study of lesions does not always make possible a diagnosis of allergic disease nor does the presence of eosinophils, which cannot be considered as typically allergic, since they are frequently missing in acute reactions. A specific hereditary constitution predisposing to allergy was discussed, and genealogical histories of polyallergic families were reported. It was reported that cases of allergy may be based on the Rh factor and may be provoked by abortion. Experiments designed to provoke bronchial asthma in guinea pigs and, thus, to analyze the psychic factor in the etiology of bronchial asthma were described. The mechanism of the action of antihistaminics, and the action of corticotropin (ACTH) and cortisone were discussed. Improvement in standardization of allergens was reported; this will permit more precise study of the pathogenic and pharmacodynamic problems of allergic reactions. A committee for nomenclature will try, in the coming years, to unify standards and definitions.

The new executive committee is as follows: president, Dr. F. W. Wittich (Minneapolis) until 1955, followed by Dr. S. Feinberg (Chicago); vice-president, Dr. U. Fabiano Aliez (Brazil), Dr. V. Radot (France), and Dr. Q. Williams (Great Britain); general secretary, Dr. B. Halpern (France); treasurer, Dr. A. Grumbach (Switzerland). The other members of the committee are Dr. W. Loeffler (Zurich), Dr. Brun (Denmark), Drs. A. Brown and F. Rackemann (United States), and Dr. S. Mallen (Mexico).

Symposium on Influence of Pituitary Gland and Cortex of Adrenal Gland on Biologic Reactions.—A symposium on the influence of the pituitary gland and the cortex of the adrenal gland on biologic reactions was held on the two days immediately following the allergists' congress. It was presided over by Dr. Miescher, head of the dermatologic clinic of Zurich University. Four reports were read. The first, by Dr. Levine, Chicago, was on the role of the suprarenal gland in tissue reactions, emphasizing the importance of the neurovascular system; the second, by Dr. M. Taubenhaus, Chicago, was on synergy and antagonism in tissue reactions; the third, by Dr. G. Shwartzman, New York, was on hemorrhagic reactions; and the last, by Dr. J. Dougherty, Salt Lake City, was on the problems of anaphylaxis and the action of corticotropin and cortisone in relation to the formation of antibodies.

TURKEY

Effect of Aureomycin and Terramycin on Rabies Virus.—In the *Turkish Bulletin of Hygiene and Experimental Biology*, Prof. Zühdü Berke, of the Ankara Refik Saydam Institute of Hygiene, and Dr. Abdülkadir Çilesiz, virologist, published the results of experiments on the effect of the new antibiotics aureomycin and terramycin on the rabies virus in rabbits. In one series of experiments rabbits were given a 1 cc. intramuscular injection of a 1:100 diluted fixed virus solution. Beginning with the fifth day of infection, they were given an intravenous injection of a 5%, slightly alkaline, glucose solution with 0.2 gm. of aureomycin, twice daily. Paralysis set in from 9 to 12 days after the virus injection and the animals died from 5 to 7 days after the aureomycin injection. In a group of control animals, paralysis set in on the fifth day after the virus injection, and the animals died the following night.

Solutions containing 0.025, 0.05, 0.1, and 0.2 gm. of terramycin were put in test tubes, and 2 cc. of a 1:200 emulsion of fixed virus was added to each. After two hours the virus was inactivated. Animals receiving 0.2 cc. of any of these solutions by intracerebral injection did not die, while all control animals died on the fifth day after rabies had developed. Rabbits injected with fixed virus and receiving 0.055 gm. per kilogram of body weight of terramycin on the fourth day and 0.11 gm. on the fifth day died on the same day as the control animals.

Medical Students Holiday.—Every year, on March 14, medical students have a holiday. Instead of classes there are lectures on Turkish medical history by professors of the two medical schools. This year marked the 125th celebration. The holiday was introduced by Sultan Mahmoud II (1785-1839), who founded the first modern medical school at Istanbul in 1827. There were centers of medical teaching of the scholastic types under the reign of Sultan Fatih, the Conqueror (1430-1481) and Sultan Suleiman I, the Magnificent (1520-1566). Under Sultan Abdul Hamid II (1876-1909), there were two medical schools in Istanbul, one for the training of physicians for the army and one for physicians for the civilian population. In 1909, after the adoption of the constitution, the two schools merged and became known as Istanbul University Medical Faculty at Haidar Pasha. In 1945 a second medical school was established at Ankara University.

Death of Mazhar Osman Uzman.—Prof. Mazhar Osman Uzman, department of psychiatry, Istanbul University, died recently of a heart attack, at the age of 68. A graduate of Istanbul Imperial Military Medical Academy, he served two years as intern at the academy's Gülhane Hospital, Istanbul-Sarayburnu, and was appointed clinic chief and associate professor at the academy in 1906. He studied in Berlin and Munich in 1908, and, on his return to Istanbul in 1911, he was appointed professor at the Military Medical Academy. He served in the Balkan War, was chief of the Istanbul-Shishli Observation Hospital, and consultant-specialist for mental and nervous disorders at the Haydar-Pasha Military Hospital. From 1918 to 1923, he was chief of the Üsküdar-Toptashi Mental Hospital and the Zeyneb Kamil Hospital. Professor Uzman reorganized the Toptashi Hospital, introducing modern methods of treatment and care. Gathering around him a group of enthusiastic, promising students, he fostered an interest in mental and nervous disorders and was instrumental in sending these students to France and Germany for postgraduate study. He worked tirelessly for the removal of the patients from the Toptashi Asylum to the modern 3,000-bed mental hospital in Bakirköy, which he directed for 10 years. When Istanbul University was reorganized in 1933, he was appointed professor of the department of psychiatry. He was one of the founders of the Turkish Society of Mental and Nervous Diseases, the Antialcoholic Society (Green-Crescent), and a member and correspondent of foreign medical societies. He wrote a dozen books on many aspects of psychiatry, the treatment of mental disorders, and drug addiction. At the request of the League of Nations, he wrote a report on drug addiction in relation to dementia precox. For 30 years he contributed innumerable articles to *Istanbul Clinic*, which he founded, and to other medical journals. During his 45 years as a teacher, his extensive knowledge, powerful personality, and skilful oratory earned him the admiration of students and colleagues.

CORRESPONDENCE

SKIN TESTING WITH COSMETICS

To the Editor:—Our attention was called to the fallacy of the preliminary tests patients make on themselves, supposedly to assure their safety from irritation of certain substances, often cosmetics and especially hair dyes. Recently, we have seen cases of severe dermatitis of the face, neck, and ears among women who first proudly, and then with disillusionment, stated, "I did the test just as the manufacturer told me to, and now look at me!"

This is the fallacy. Apparently, neither patients nor some manufacturers realize that a test done on the normal body will be negative, but that after exposure there is a period during which sensitization develops, and the same test performed a week or so later may prove quite positive. Thus, a woman will apply a hair dye convincingly ballyhooed and obtain no reaction from her first test; then, when she uses the product two or three weeks later, severe dermatitis may result. The manufacturer does not stress in his advertising this possibility of the development of sensitization. It ought to be stressed.

So, self-interpretation of preliminary tests is often at fault. Further, it is even conceivable that in some persons the original self-testing may initiate the sensitization.

Norman R. Goldsmith, M.D.
230 N. Duke St.
Lancaster, Pa.

ANTABUSE® AND BARBITURATES

To the Editor:—Giarman, Flick, and White in "Prolongation of Thiopental Anesthesia in the Mouse by Premedication with Tetraethylthiuram Disulfide ('Antabuse')" (*Science* **114:**35 [July 13] 1951) show that premedication of mice with antabuse® markedly potentiates the effect of thiopental (pentothal®) sodium, the anesthesia time being increased sixtyfold. Graham, Carmichael, and Allmark in The *in Vivo* Potentiation of Barbiturates by Tetraethylthiuram Disulfide (*J. Pharm. & Pharmacol.* [illegible]: 97 [Aug.] 1951) demonstrate a similar effect in rats and guinea pigs, with sodium cyclural (hexobarbital sodium, evipal® soluble) and sodium phenobarbitone (sodium phenobarbital, luminal® sodium). The sleeping time was approximately doubled.

Although, so far as the writer is aware, the potentiation of barbiturates in man by antabuse® has not been recorded, it is evident that, until data on this point are available, great caution should be observed in permitting the use of barbiturates in persons treated with antabuse.® The effects on such persons of even small doses of barbiturates might be much greater than normal and lead to added dangers in the operation of machines, automobiles, and the like. Such circumstances might be rather likely to occur, since a chronic alcoholic being deprived of alcohol might well present indications for sedative medication with the barbiturates.

Giarman and co-workers suggest caution in administering thiopental to persons treated with antabuse.® In view of the confirmatory and more extensive results of Graham and associates and the recent release of the drug for prescription use, it would appear that the warning should be strongly emphasized to physicians administering antabuse® to patients.

Johannes S. Buck, Ph.D.
Sterling-Winthrop Research Institute
Rensselaer, N. Y.

PSYCHOTHERAPY AND CANCER

To the Editor:—The case described in a letter by Dr. W. G. Eliasberg (Psychotherapy in Cancer Patients, *J. A. M. A.* **147:**525 [Sept. 29] 1951) and also reported by Dr. Otto Kant (Deceptive Psychoneurosis, *Psychiatric Quarterly* **20:**129 [Jan.] 1946) certainly needs further serious comment. Psychotherapy ostensibly suppressed the main symptoms of pain and improved the general attitude and behavior in this "mental" case, which autopsy ultimately proved to be carcinoma of the pancreas with widespread metastases and sudden death due to pulmonary embolism.

It has been known for some time and it has again been recently stressed by Dr. Irving J. Sands, of the department of neurology at Columbia (Proceedings of 145th Annual Meeting of the Medical Society of the State of New York, Section on Neurology and Psychiatry, May 4, 1951, *N. Y. State J. M.* **51:**2370 [Oct. 15] 1951) that true somatic disease may precipitate psychiatric disorders by interfering with the cerebral circulation. We know that the nature of malignant neoplasm is to metastasize and usually to throw off thrombi, microscopic and, later, macroscopic, as undoubtedly occurred in the case in question. The lesson learned here, in my opinion, is not so much from the influence of psychotherapy on pain and behaviorism but from the failure to recognize advanced malignancy during life. This was made difficult by overemphasis and assurance on applied psychotherapy.

Without going into a lengthy discussion, I need only mention that some patients with cancer of the pancreas have excruciating pain at the level of that organ with automatic lytic diminution of that pain as the disease progresses, with or without personality disorders. Certainly, Dr. Eliasberg's patient, who this time knew that he really was sick, cannot really be blamed for being "concerned with himself," inasmuch as the psychiatric approaches failed to utilize that knowledge. Psychotherapeutic dynamics producing powerful anabolic endocrine stimuli apparently kept this dying man on his feet until the last moment, but at a cost, it seems to me, to the prestige of the medical profession.

C. D. J. Generales, M.D., Ph.D.
115 Central Park West, N. Y.

HOSPITAL MANAGEMENT

To the Editor:—I have just read the item entitled "Hospital Management Called Uneconomical," which appeared in Washington News of the December 8 issue of The Journal, which purports to be the reporting of a talk I gave at the Annual Conference of the Maryland-District of Columbia-Delaware Hospital Association in Washington, D. C., on Nov. 26.

I cannot let go unchallenged the very poor reporting in this article. I feel that the statement reflects unfairly on hospitals and hospital administrators and is a gross distortion of my talk and that I must try to correct the erroneous statements and quotations attributed to me. I wish to contradict flatly the opening statement that I believe "hospital management in general is uneconomical." I do not hold such a belief, nor did I express any such opinion at the meeting referred to or elsewhere. This is not to say that the management of hospitals, like most other businesses, cannot be improved and economies and increased operating efficiencies obtained. It was to this objective that my talk was directed; namely, that hospital management must constantly seek improvement. My entire talk was devoted to a discussion of accomplishing improvement through the use of the technique of management commonly referred to as a management audit. My talk was specific and dealt with three aspects of management audits or appraisals; namely, what a management audit or appraisal is, the need for the use of this management tool, and how to use it to improve management.

Whoever wrote the article in Washington News appears to have taken a few of my remarks completely out of context. I could not "get away" with telling a group of hospital executives that (to quote The Journal statement) "no other industry could survive under the loose, wasteful system that characterizes the management of hospitals." What I actually stated in my talk was that large industries had already learned that they could not afford to be without the use of periodic management appraisals of their operations if they are to survive in present day competitive markets. I emphasized that since the hospital business ranks fifth or sixth in dollar volume in this country, hospitals should capitalize on industry's experience and learn how to eliminate any wasteful expenditures and obtain maximum efficiency.

FRED A. MCNAMARA
U. S. Bureau of the Budget
Executive Office of the President
Washington 25, D. C.

COUNCIL ON MEDICAL SERVICE

EMERGENCY MEDICAL CALL PROGRAMS

The layman argues that, if he is unable to obtain the services of a physician whenever one is needed, the profession is not serving the public properly. Every time a patient complains that he has not been able to secure emergency medical treatment, the reputation of the profession suffers. This is true even though a physician may have been available, but the patient did not know how to contact him. It is, therefore, gratifying to note that an ever-increasing number of medical societies have organized or are organizing emergency medical call programs, designed to provide medical care at any hour for the person who cannot contact his own physician or who does not have a personal physician.

THE NATIONAL PICTURE

Rapid strides have been made in developing emergency call systems. In 1948, only about 60 medical societies reported having a formal plan for handling emergency and night calls; in 1949, the number was estimated at between 100 and 120; and in 1950, it had risen to over 350. While every county or city has real emergency cases, not every county medical society needs a formal or organized program for handling emergencies. Those counties with few residents and few physicians may effectively rely on the normal physician-patient relationships in emergencies. In the heavily populated county, on the other hand, the greater number of physicians not only makes it difficult for the patient to check through the whole list to find one available but also makes it difficult for physicians to make any informal arrangement for one of their number to be on call at all times. In view of this, the distribution by size of county society of the 364 emergency call plans reported to the Council on Medical Service in 1950 is more reassuring than the number of plans itself would indicate. As the table shows, over 80% of the large medical societies, groups 3 and 4, now have emergency call plans. It is apparent from the table that attention should be focused on the smaller medical societies. This has been done in a study made this fall by the Council on Medical Service.

Distribution of Emergency Call Plans

	Total No. of Societies	No. of Societies Reporting Plans	Percentage of Societies with Plans
Group 1 (less than 100 members)......	1,705	219	13%
Group 2 (100-200 members)............	114	53	46%
Group 3 (200-300 members)............	40	29	72%
Group 4 (over 300 members)..........	71	63	88%
Total..............................	1,930	364	

SURVEY OF COUNTY MEDICAL SOCIETIES

The Council on Medical Service recently surveyed the emergency call methods employed by 143 county medical societies to learn the various methods employed in handling this problem. Of this number, 108 have organized or formal plans; 11 are in the process of either formulating such plans or reorganizing plans that have proved inefficient; 5 did not provide sufficient information to be classified; and 19 find the regular physician-patient relationship adequate for emergencies. The plans studied are located in 38 states and the Territory of Hawaii and serve counties ranging from 10,000 to over 1,000,000 population. To provide data for the solution of the primary problem, that of organizing plans in the smaller communities, the majority of the plans studied are those of societies in groups 1 and 2 (table 1). The breakdown of plans by size of medical society is as follows: 55 plans in groups 1, 34 in group 2, 17 in groups 3, and 37 in group 4. The Council plans to present the information concerning these programs in a pamphlet designed particularly for county medical societies. The information is already available in mimeographed form for medical society officers at the Council office.

TYPES OF PLANS

Some counties have such a small population and so few physicians that the only possible plan is an agreement among the physicians that one of their number will be available at all times. This, of course, is the least complicated method and is probably adequate for the majority of the 1,930 county societies, since almost 90% of them are in group 1. Among medical societies with less than 100 members which have an organized plan, the local hospital (or hospitals) is generally the agency through which emergency calls are handled. In such counties, all or nearly all of the physicians are staff members of the local hospital (or hospitals) and its switchboard provides the most convenient central office for receiving calls and contacting physicians.

Medical societies with from 100 to 200 members also use local hospitals as dispatching agencies but generally prefer to utilize the services of private telephone exchanges. Here, the number of hospitals complicates efficient dispatching and, since there is seldom more than one private telephone exchange, the one in operation offers the most centralized service.

The larger medical societies—more than 200 members—also prefer to use private telephone exchanges, although approximately one-third have established society owned and operated telephone services. Some county societies use several hospital switchboards or telephone answering services or a combination of both; however, except in the counties where geographical characteristics make it necessary to have separate emergency rosters for each district, it appears more efficient to use one central switchboard for all emergency calls. Whether this central dispatching office is a hospital, a private telephone service, or a medical society switchboard depends entirely on local conditions. A single agency seems more desirable than a multiple service, since it not only speeds contact with the physician by avoiding confusion as to which number the patient should call but also places the responsibility for securing a physician upon one organization.

THE EMERGENCY PANEL

Theoretically, every physician should do his share in caring for emergencies, and in many of the smaller county societies all members are required to serve on the emergency panel. In the larger medical societies, on the other hand, the various specialties complicate the problem and make it almost necessary to set up the emergency panel on a volunteer basis. Some panels do provide for specialist listings, but usually they are limited to general practitioners. Thus, of the 58 societies reporting that their rosters are made up of volunteers, 41 were in counties with more than 100,000 population; and, of the 16 societies that reported that all members physically able to do so were called upon to serve, 12 are in counties with less than 100,000 population. In the smaller counties, the panel members are generally scheduled to handle calls for a set period, anywhere from one day to one month in duration. In the large counties the panel members are usually selected in rotation, a different physician being called for each emergency.

FUNCTION OF DISPATCHING AGENCY

The function of an emergency call dispatching agency, whether it be a hospital, private telephone exchange, or medical society switchboard, goes beyond that of the regular telephone answering service. Having accepted the responsibility of getting a physician in an emergency, the agency should assume responsibility for contacting the physician rather than merely supplying the caller with the names of one or more physicians. The agency should also receive reasonable assurance from the physician that he will make the emergency call.

Lists of all such calls, together with the facts as to their handling, should be kept by the dispatching agency and reported at regular intervals to the medical society. It is through such information that the medical society learns the extent of the problem and of the cooperation or lack of cooperation on the part of the membership.

MEDICAL SOCIETY FUNCTION

Development of an efficient emergency call plan is an important step any medical society can take toward assuring the public that medical care will be available when needed. It is true that emergencies are few in number when compared to all other medical care services, but their inherent possibilities for unsavory headlines make them a primary problem to be solved. It is almost axiomatic to say, "Take care of the emergencies and the routine will take care of itself."

Medical societies, then, have a definite function to perform in making sure that no emergency call goes unanswered. Individual physicians, of course, provide the medical service, but medical societies must provide for unity and direction of individual physician effort to the end that all emergency calls are cared for promptly. Having arranged for medical care of emergencies, it then behooves the medical society to publicize this program widely and continuously. Regardless of the type of emergency call program developed, the effort will be lost unless the public is aware of it and how it should be used.

Planning and arranging for adequate medical service programs in any community, large or small, is not a one way street. Public neglect or abuse of any medical service program can cause its failure. The citizens, too, have a responsibility in their local emergency call plan, namely, to use the service only when necessary. This should be clear to them from the outset. Emergency call plans are for the benefit of the public and require the cooperation of the public.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Malpractice: Necessity for Expert Testimony.—The plaintiff filed suit for damages alleged to have resulted from the improper setting of the plaintiff's fractured ankle by the defendant physician. From a judgment in favor of the defendant, the plaintiff appealed to the Supreme Court of Washington.

The plaintiff fractured an ankle as the result of a fall from a bicycle and was taken to the office of the defendant, her family physician. He took an X-ray of the injury, and diagnosed a fracture of the posterior lip of the tibia, which was shoved up and displaced upward to a sixteenth of an inch, and which he attempted to put back in place, but was not altogether successful. After setting the fracture, he put a stockinette on the ankle and placed it in a plaster cast. The accident occurred on the 7th of May and the defendant saw the plaintiff many times until about September 1st, the cast having been removed on July 13th. No X-ray was taken while the cast was on. However, one was taken immediately after the removal of the cast on July 13th. It showed the posterior lip of the tibia to be in exactly the same position as it was when the first picture was taken. The defendant told the plaintiff that the second X-ray showed a good, firm union, and that the alignment of the bone was good. The plaintiff continued to suffer severe pain, however, and on October 22nd, having moved to Spokane, the plaintiff consulted a Dr. Grieve, who found the ankle swollen and the foot displaced posteriorly.

The plaintiff first contended that the defendant physician was negligent in failing to reduce the swelling of the ankle joint. At the trial Dr. Grieve testified that in his opinion the swelling was caused by circulatory disturbances of the soft tissue. He thought there was a possibility that nature would take care of that and recommended physiotherapy, which was not effective. Negligence on the part of a physician or surgeon, said the Supreme Court, must be established by medical testimony and there was nothing in Dr. Grieve's testimony on which a jury could base a finding that the swelling was the result of any act or omission of the defendant.

The plaintiff next contended that the defendant failed to set the broken ankle properly. Dr. Grieve testified that the over-all alignment was good but that the posterior lip of the tibia was still displaced slightly, and that that is a very vital part as far as function is concerned. He also testified that he had treated fractures of this type where he did not get a good result, even with an open reduction. He testified that his procedure to reduce fractures of this kind was to give a general anesthetic, manipulate the ankle and apply a cast, and check it with an X-ray to see that he had the proper alignment. He did not testify, however, that the defendant used the wrong procedure, or that he failed to do anything in conformity with correct procedure.

As to whether or not the defendant negligently failed to employ the X-ray after he had set the ankle to ascertain whether or not a satisfactory union had been secured, Dr. Grieve testified that one cannot get a clear picture through the cast and that a picture through the cast would not have benefited the defendant in this instance in ascertaining whether or not a satisfactory union had been secured.

The plaintiff also charged that the defendant negligently failed to care for the plaintiff following the accident by reason of the fact that he departed on a vacation without first removing the cast from the ankle. Dr. Grieve testified that a fractured ankle such as the plaintiff's should be kept in the cast until there was a good bony union; that it might take a year. He had no recollection of having told the plaintiff that the cast had been on too long. When asked if it was possible that he made that statement, he replied: "It is possible, but three months is not a particularly long time to have a cast on a thing of that nature."

We cannot start out with the premise that the plaintiff will have a stiff ankle for the rest of her life, and conclude therefrom that her condition is due to the negligence of the defendant, said the Supreme Court. We must find that the defendant did something in the treatment of his patient which the recognized standard of medical practice in his community forbids in such cases, or that he neglected to do something required by those standards. This question can only be determined by medical evidence and the Supreme Court was of the opinion that the evidence was insufficient to warrant submitting to the jury the question of the defendant's negligence in setting the fractured ankle.

Accordingly the judgment of the trial court in favor of the defendant physician was affirmed.—*Derr v. Bonney, 231 P. (2d) 637 (Washington, 1951).*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Internal Medicine, Chicago

88:553-698 (Nov.) 1951

*Hemochromatosis: Investigation of 23 Cases with Special Reference to Etiology, Nutrition, Iron Metabolism, and Studies of Hepatic and Pancreatic Function. T. L. Althausen, R. K. Doig and others.—p. 553.
Effect of Vasopressin (Pitressin®)-Induced Water Retention on Sodium Excretion. B. C. Holland and E. G. Stead Jr.—p. 571.
Adaptation to Anoxia in Chronic Pulmonary Emphysema. R. H. Wilson, C. W. Borden and R. V. Ebert.—p. 581.
Clinical Varieties of Chronic Myocardial Insufficiency. H. A. Christian.—p. 591.
Myocardial Infarction With and Without Acute Coronary Occlusion: A Pathologic Study. R. D. Miller, H. B. Burchell and J. E. Edwards.—p. 597.
*Oral Use of Cation-Exchange Resins in Treatment of Edema. K. Emerson Jr., S. S. Kahn, J. W. Vester and K. D. Nelson.—p. 605.
Subclinical Infectious Mononucleosis with Hepatitis: Epidemic in Class of 102 Medical Students; Two-Year Study. J. Watson, P. Johnson, J. Kahn and F. M. Stone.—p. 618.
The Adrenal Cortex in Rheumatic Disease: Pathologic Study with Special Reference to Effects of Cortisone and Corticotropin. L. Sokoloff, J. T. Sharp and E. H. Kaufman.—p. 627.
*Dermatomyositis. C. Sheard Jr.—p. 640.
Struma Lymphomatosa (Hashimoto's Struma): Review of 51 Cases with Discussion of Endocrinologic Aspects. H. Statland, M. M. Wasserman and A. L. Vickery.—p. 659.
Salmonella Endocarditis. A. R. Stumpe and N. B. Baroody Jr.—p. 679.
Nonspecific Granuloma of Rectum and Sigmoid Colon: Lesions of Rectum and Sigmoid Colon Which Clinically Simulated Cancer but Which Responded to Aureomycin Therapy. M. S. Belle, S. Fox and R. Allen.—p. 685.
Fat Embolism. E. P. Carreau and G. A. Higgins.—p. 692.

Hemochromatosis.—From a study of 23 cases of hemochromatosis the authors reached the following conclusions: This disease starts early in life (probably before puberty) and runs a slow, progressive course. Early diagnostic signs are pigmentation of the skin (especially on the forearms), sparsity of body hair, hepatomegaly, and weakness. The diagnosis can be confirmed best by demonstrating hemosiderin in the liver or gastric mucosa by biopsy. A constitutional factor in the causation of hemochromatosis is suggested by its occasional occurrence in siblings and by the lifelong sparsity of body hair in male patients that antedates by many years evidence of sexual regression. Exogenous toxins and malnutrition are excluded, and alcoholism is ruled out as the main factor, in the etiology of this disease. Recent investigations favor the hypothesis that excessive deposits of hemosiderin in normal storage depots of the body, secondary to excessive intestinal absorption of iron, are responsible for the disturbances of function and structure in hemochromatosis. In their series the authors observed that: (1) Excessive intestinal absorption of iron in hemochromatosis was not induced by alterations in the iron-phosphate ratio in the diet. (2) Two-thirds of the patients had serum iron levels exceeding the upper limits of normal. (3) Menstrual loss of iron was less than normal in the three women in this series. (4) Cirrhosis of the liver in hemochromatosis was clinically, functionally, and histologically relatively benign as compared with other types of cirrhosis with a comparable degree of fibrosis. (5) Pancreatic function tests in many cases showed impairment in digestion of gelatin, and hypersecretion of dilute pancreatic juice in response to secretin. (6) Electrolyte and blood pressure studies did not support the view that pigmentation and weakness in hemochromatosis are due to adrenocortical deficiency. (7) The slaty pigmentation was due not to deposition of hemosiderin in the skin but to increased amounts of melanin in the basal layer of the thinned epidermis.

Cation-Exchange Resins in Edema.—The authors investigated the immediate and long term results of oral administration of cation-exchange resins in 14 patients with edema from various causes. They concluded that this was a practical and effective procedure for reduction of edema by removal of sodium from the intestinal tract. The amount of sodium removed ranged from 0.25 to 0.8 mEq. per gram of resin, sometimes reaching higher levels for short periods. This amount was only partially dependent on the sodium ingested. It was possible to remove sodium from body fluids and thereby achieve a negative sodium balance. A daily dose of 45 gm. of resin may be expected to remove approximately 2 gm. of sodium chloride. Larger doses may be given but are likely to be poorly tolerated because of their bulk. Since most resins remove more potassium than sodium, at least 1.3 mEq. of potassium (equivalent to 0.1 gm. of potassium chloride) must be supplied per gram of resin administered. Small calcium supplements should probably be given in addition. The authors caution against the use of resin-therapy in patients with renal insufficiency, since the loss of base in the feces must be compensated for by renal ammonia and acid production or systemic acidosis will result. The advantage of resin therapy is that it withdraws sodium slowly and steadily over prolonged periods without the sudden fluctuations induced by most diuretics. The disadvantages lie in the large quantity of material that must be ingested daily, the possibility of gastric irritation, and the danger of inducing acidosis in patients with renal disease, or potassium depletion if potassium supplements are not given.

Dermatomyositis.—Sheard reports on three patients in whom dermatomyositis was associated with visceral carcinoma, and reviews a number of additional cases previously reported. He then analyzes the histories of 25 cases of dermatomyositis without carcinoma for characteristic clinical and laboratory findings. An eruption on the face or hands was the initial symptom in over half the patients. Muscular weakness was shown by all, and the majority complained of pain in the muscles. Joint pains, dysphagia, serositis, edema, calcinosis, induration of the skin, and Raynaud's phenomenon were other symptoms. Many patients showed mild anemia, increased sedimentation rate, albuminuria, and electrocardiographic changes suggesting myocardial damage. The disease usually had a gradual onset. It tended to run a short course with high mortality in children and young adults and a longer course with eventual recovery in older adults. After reviewing the etiological and pathological aspects of the disease, the author concludes that a search for malignant tumors, focal infection, and endocrine disturbances should be made in every case of dermatomyositis.

American J. Digestive Diseases, Fort Wayne, Ind.

18:293-322 (Oct.) 1951

Cause of Fat Necrosis Following Excision of Pancreatic Duct from Duodenum. H. L. Popper and H. Necheles.—p. 293.
Healing of Peptic Ulcer. M. Feldman and T. Weinberg.—p. 295.
Healing of Primary Duodenal Ulcer with Later Development of Gastric Ulcer. S. Morrison and M. Feldman.—p. 296.
Effect of Chloride Concentration in Determination of Lysozyme Activity. O. E. Lobstein and S. J. [illegible].—p. 298.
Relation of Functional Hyperinsulinism to Visceroptosis: Report of 21 Consecutive Cases. H. [illegible].—p. 300.
Correlation of Punch Liver Biopsy with Autopsy Material. C. F. [illegible], I. F. [illegible], F. V. [illegible] and M. C. F. [illegible].—p. 304.
[illegible] and [illegible] in Treatment of Functional Constipation. M. M. [illegible].—p. [illegible].
[illegible] in [illegible] and Problems of the Physician's Outlook. M. [illegible]
[illegible] Considerations in Liver Disease. A. C. Ivy [illegible]

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in Continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for personal use only from them.

Titles marked with an asterisk (*) are abstracted.

American Journal of Hygiene, Baltimore

54:157-294 (Sept.) 1951

Use of Adjuvants to Facilitate Studies on Immunologic Classification of Poliomyelitis Viruses. J. E. Salk, L. J. Lewis, J. S. Youngner and B. L. Bennett.—p. 157.

Second Attacks of Paralytic Poliomyelitis in Human Beings in Relation to Immunity, Virus Types and Virulence: With Report of Two Cases, and Four Other Individuals in Baltimore, 1944, Infected with Virus of Leon Type. D. Bodian.—p. 174.

Immunologic Classification of Poliomyelitis Viruses: I. Cooperative Program for Typing of 100 Strains. The Committee on Typing of the National Foundation for Infantile Paralysis. C. Armstrong and others. —p. 191.

Id.: II. Results Obtained with Method for Testing Resistance of Monkeys Immunized with Prototype Viruses. J. F. Kessel, C. F. Pait, U. Pentti Kokko, L. P. Gebhardt and others.—p. 205.

Id.: III. Results Obtained with Method of Neutralization with Prototype Antisera. J. E. Salk, B. L. Bennett, L. J. Lewis and others.—p. 216.

Id.: IV. Results of Typing by Neutralization of Prototype Viruses with Antiserum Produced by Vaccinating Monkeys with Unknown Strain and an Adjuvant. J. E. Salk, J. S. Youngner, L. J. Lewis and B. L. Bennett.—p. 255.

Id.: V. Discussion of Results and General Summary. The Committee on Typing of the National Foundation for Infantile Paralysis.—p. 268.

Antibodies to Three Different Antigenic Types of Poliomyelitis Virus in Sera from North Alaskan Eskimos. J. R. Paul, J. T. Riordan and J. L. Melnick.—p. 275.

Studies on Cultivation of Poliomyelitis Viruses in Tissue Culture: V. Direct Isolation and Serologic Identification of Virus Strains in Tissue Culture from Patients with Nonparalytic and Paralytic Poliomyelitis. F. C. Robbins, J. F. Enders, T. H. Weller and G. L. Florentino. —p. 286.

American Journal of Medicine, New York

11:409-534 (Oct.) 1951

Auricular Flutter. M. Prinzmetal, E. Corday, R. W. Oblath and others. —p. 410.

*Use of Pronestyl in Treatment of Ectopic Rhythm: Treatment of 98 Episodes in 78 Patients. K. Berry, E. L. Garlett, S. Bellet and W. I. Gefter.—p. 431.

Effect of Isuprel (Isopropylepinephrine) on Circulation of Normal Man. J. Kaufman; A. Iglauer and G. K. Herwitz.—p. 442.

Re-Evaluation of Reliability of Pharmacologic and Cold Pressor Studies in Hypertension and Pheochromocytoma. J. A. Evans, H. J. Rubitsky, C. C. Bartels and E. C. Bartels.—p. 448.

*Pharmacologic Basis of Various Tests Used in Diagnosis of Pheochromocytoma. G. Entwisle, C. A. Stone and E. R. Loew.—p. 461.

Protein-Lipid Relationships in Human Plasma: I. In Normal Individuals. E. M. Russ, H. A. Eder and D. P. Barr.—p. 468.

Id.: II. In Atherosclerosis and Related Conditions. D. P. Barr, E. M. Russ and H. A. Eder.—p. 480.

Procaine Amide in Ectopic Rhythms.—Procaine amide ("pronestyl") differs structurally from procaine in that the *p*-aminobenzoic acid and the diethylaminoethanol are bound through an NH group rather than by an ester linkage. Procaine amide is not affected by the procaine esterase of the body and consequently is effective orally or intravenously. This drug was used by Berry and associates in 98 episodes of electrocardiographically proven arrhythmias in 78 patients. The drug was administered intravenously 24 times (to 21 patients) until the ectopic rhythm was abolished, then orally in maintenance doses 26 times (to 12 patients); and only orally 48 times (to 45 patients). The intravenous preparation was administered at a rate of not more than 200 mg. per minute under constant electrocardiographic control until the electrocardiogram showed normal sinus rhythm, until toxic manifestations were observed, or until a total of 1 gm. had been given. The effective oral dose varied widely and was established largely by trial. The usual dose given was 0.5 to 1 gm. every four hours. Oral administration is considered the method of choice, but the intravenous administration of procaine amide is believed safer than the corresponding effective dose of quinidine administered by the same route. The arrhythmias treated included the following types: ventricular tachycardia, nodal tachycardia, paroxysmal auricular tachycardia, auricular flutter, auricular fibrillation, and multiple premature ventricular contractions. Procaine amide was effective in converting a large proportion of these arrhythmias to normal. It was notably unsuccessful in converting auricular flutter or auricular fibrillation to a normal rhythm. Hypotension, which in two patients resulted in the production of coronary insufficiency and in two others produced convulsive seizures, was the most serious toxic manifestation. To guard against it, it is suggested that the intravenous preparation be given no faster than 100 mg. per minute, and continuous electrocardiographic records and repeated blood pressure determinations be made during the administration. Procaine amide is an important addition to the therapeutic armamentarium in ectopic rhythms, particularly those of ventricular origin.

Pharmacologic Basis of Tests for Pheochromocytoma.—Entwisle and associates review the published evidence and their own experimental observations of the pharmacologic actions of various substances used in diagnosis of pheochromocytoma. They show that these tests can be divided into two groups, depending on whether a paroxysmal attack is induced or whether there is blockage of circulating epinephrine and/or arterenol. Histamine and tetraethylammonium bromide probably induce attacks by a direct stimulation of the adrenal medullary tissue. The mechanism of action of methacholine (mecholyl®) in inducing attacks in patients with pheochromocytoma is still not clear. It may be due in part to direct stimulation of the chromaffin tumor and/or reflex stimulation due to a preliminary fall in blood pressure. The adrenergic blocking agents prevent the pressor responses to the circulating epinephrine and arterenol liberated from the adrenal tumors.

American Journal of Psychiatry, New York

108:321-400 (Nov.) 1951

Present Status and Future Needs of Psychiatric Facilities in General Hospitals in the United States and Canada. A. E. Bennett, E. A. Hargrove and B. Engle.—p. 321.

Evaluation of Immediate and Late Results of Prefrontal Lobotomy in 600 Cases, Including Case of Postencephalitis and Other Organic States. H. J. Worthing, H. Brill and H. Wigderson.—p. 328.

Anosognosia: Report of Case of Anosognosia for Blindness. H. Oppenheimer and M. Weissman.—p. 337.

Astrocytoma of Left Temporal Lobe: Contribution to Problem of Psychopathology of Epileptic Personality Disorder, and to Problem of Semantic Aphasia. E. G. Winkler, G. V. Freiman and S. S. Lieberman. —p. 343.

Group Therapy for Parents of Behavior Problem Children in Public Schools: Failure of Method in a Negro School. J. Kahn, A. D. Buchmueller and M. C. L. Gildea.—p. 351.

Use of Group Processes in Teaching Group Dynamics. E. V. Semrad and J. Arsenian.—p. 358.

Psychological Factors in Women with Peptic Ulcers. E. Kezur, F. T. Kapp and M. Rosenbaum.—p. 368.

Helping Teachers Appreciate Emotional Problems in Children. H. Farmer and W. B. Rossman.—p. 374.

Hypnosis Reading List for Professional Instruction. J. M. Schneck. —p. 381.

Am. Practitioner & Digest of Treatment, Philadelphia

2:921-1008 (Nov.) 1951

Osteoporosis, Osteomalacia and Osteitis Fibrosa Cystica, with Special Reference to Parathyroid and Calcium Metabolism. E. H. Winn and A. S. Minot.—p. 921.

*Chronic Relapsing Pancreatitis. F. E. McDonough, E. W. Heffernon and M. Patterson.—p. 928.

Treatment of Tension Headache. R. F. Grenfell.—p. 933.

Chloromycetin (Chloramphenicol) in Treatment of Pneumococcic Pneumonia and Miscellaneous Infections. B. E. Gilpin and L. C. Rohrs. —p. 937.

*New Cation Exchange Resin in Therapy of Edematous States. D. W. Chapman, F. C. Pannill Jr., and R. H. Skaggs.—p. 945.

Actinomycosis: Report of Four Cases and Brief Review of Literature. E. Wasserman.—p. 951.

Current Concepts of Climacterium. M. Ross.—p. 955.

Instructive Diagnostic Errors. A. Kahn and J. S. Griffin.—p. 959.

Physical Treatment and Rehabilitation of Hemiplegic Patient in General Practice. O. F. Von Werssowetz.—p. 963.

Chronic Relapsing Pancreatitis.—Chronic relapsing pancreatitis has become firmly established as a disease entity with characteristic clinical manifestations and pathological findings. Pain is the most consistent presenting symptom, located anywhere in the abdomen, but most commonly in the epigastrium with radiation to the back and left flank. Microscopically, fibrosis and fibroplastic proliferation predominate, often to the extent that the normal lobular arrangement of the gland is obliterated. The pathogenesis of chronic relapsing pancreatitis is far from clear except for the fairly well-established fact that some degree of obstruction to the flow of pancreatic juice is responsible for development of this morbid process. Diagnosis remains difficult because the severity and frequency of the attacks are unpredictable and cumulative pancreatic damage is variable. Severe abdominal pain contrasted with minimal physicial signs is the most helpful diagnostic criterion. The diagnostic help from laboratory tests depends on the stage of the disease. During a painful relapse, nonspecific leukocytosis and an increase in the sedimentation rate are usually found. More specific findings are an elevated serum amylase and lipase level and glycosuria or hyperglycemia. Between attacks of pain the tests used to detect subclinical diabetes should be carried out, but they will be negative unless extensive pancreatic damage has already developed. Roentgenographic demonstration of calcification in the pancreas is the one pathognomonic sign of chronic relapsing pancreatitis and the correct diagnosis often is made during roentgenologic study of adjacent organs. Tests of pancreatic function are of very limited diagnostic value. Both medical and surgical treatment is unsatisfactory. During the painful episodes antispasmodics should be tried for their possible effect in relaxing the sphincter of Oddi and suppressing pancreatic secretion. When it is obvious that these drugs do not control the pain sufficiently, narcotics in therapeutic doses must be administered. Surgical therapy should be instituted before narcotic addiction is fixed. Surgical procedures include those carried out on the pancreas itself, those designed to affect the disease process in the pancreas indirectly, and those that interrupt pain transmission from the pancreas.

New Cation-Exchange Resin.—Thirty-two patients with various edematous states were treated with a carboxylic acid resin. The first 12 were given 10 gm. of the acid resin and 5 gm. of the potassium salt of the resin three times daily before meals for 5 to 38 days. The remaining 20 patients were given 12 gm. of a mixture consisting of 5 parts carboxylic acid resin, 2.5 parts potassium resin, and 1 part anion exchange resin four times daily, before meals and at bedtime, for 7 to 50 days. All patients in the first group were hospitalized and the first 11 patients of the second group were hospitalized. The remaining nine were outpatients. All patients received a diet containing 6 gm. of sodium chloride (approximately 100 mEq. of sodium). The resins were easily suspended in liquids by rapid stirring and were taken quite readily. With two exceptions, no gastrointestinal symptoms were reported by any patient. No symptoms suggestive of rapid sodium depletion were observed. Loss of body weight varied from 3 to 33 lbs. (1.3 to 15 kg.). A prolonged QT interval was noted in only one patient and was thought to be due to the primary disease process. All patients commented on the increased palatibility of their food as compared to low sodium or low salt diets. One instance of pronounced lowering of the carbon dioxide combining power was noted, but when resin therapy was discontinued for one week and then reinstituted at one-half the previous dose level, normal carbon dioxide combining power was restored. It is thought that the chief use of carboxylic acid-potassium-anion resin mixture will be in retaining dietary sodium within the lumen of the bowel to be excreted in the stool. Thus it will allow more liberal dietary management of patients for whom sodium restriction is thought necessary. It is not designed to take the place of digitalis or mercurial diuretics when these agents are indicated for proper management of the patient, but mercurial requirement may be decreased sharply during resin therapy. Excessive loss of potassium is avoided by use of a potassium resin, and the addition of a small amount of an anion exchanger reduces the hazard of acidosis. The resins are contraindicated in patients with impaired renal function. Results showed that the optimum dose is 48 gm. daily with a 6 gm. sodium chloride diet, but this is subject to individual variation. Laboratory control should include determinations of carbon dioxide, chloride, and urea nitrogen in the serum and sodium chloride in the urine, as well as routine urinalyses.

Bulletin New York Academy of Medicine, New York

27:643-690 (Nov.) 1951

Mechanism and Management of Circulatory Failure. W. Dock.—p. 645.
Surgical Treatment of Parkinsonism: Indications and Results. J. Ebin.—p. 653.
Body Water in Man and Its Subdivisions. J. M. Steele.—p. 679.

California Medicine, San Francisco

75:321-384 (Nov.) 1951

Treatment of Craniocerebral Injuries and Prevention of Anoxia. J. E. Adams.—p. 321.
Topical and Systemic Use of Cortisone in Dermatology. B. A. Newman and F. F. Feldman.—p. 324.
Current Concepts of Primary Dysmenorrhea. M. Ross.—p. 332.
Role of Connective Tissue Ground Substances (Mucopolysaccharides) in Allergic Injury. J. F. Rinehart.—p. 335.
Intensive X-Ray Survey for Tuberculosis in Rural County. W. R. Oechsli, H. Cohn, C. R. Kroeger and A. A. Adames.—p. 341.
Surgical Principles of Incising Renal Parenchyma. G. L. Torassa.—p. 345.
Adenotonsillectomy: Indications and Application of Surgical Techniques. E. Leivers.—p. 351.
Radiation Therapy in Breast Cancer: Preliminary Report on Application of Technique of McWhirter Type. E. A. Lodmell and P. R. Brady.—p. 354.
Pros and Cons of Routine Circumcision. D. Hovsepian.—p. 359.
Colles' Fracture: Method of Maintaining Reduction. L. Cozen.—p. 362.
Eosinophilic Pneumonia (Loeffler's Syndrome): Report of Case Treated with ACTH. E. R. Riggall and J. J. McGinnis.—p. 365.
Erythema Nodosum: Treatment with Cortisone by Mouth. R. W. Albright and M. J. Kuffel.—p. 368.
Waterhouse-Friderichsen Syndrome: Recovery of Patient Treated with Cortisone. J. T. Fowler Jr.—p. 369.

Indiana State Medical Assn. Journal, Indianapolis

44:1057-1144 (Nov.) 1951

The Doctor's Place in the Sun. A. Ellison.—p. 1089.
Testicular Tumors with Seven Case Presentations. C. J. Van Tassel Jr.—p. 1092.
Case of Waterhouse-Friderichsen Syndrome Due to Hemophilus Influenzae. A. J. Kahn and R. M. Butler.—p. 1098.
Analysis of Present-Day Surgical Treatment of Peptic Ulcer. C. A. Wiethoff.—p. 1101.
Clinical Evaluation of Surital Sodium, New Intravenous Barbiturate: Report of 1000 Cases. P. A. Littlefield, V. K. Stoelting and J. P. Graf.—p. 1105.

Kentucky Medical Journal, Bowling Green

49:429-478 (Oct.) 1951

Prevention of Eclampsia. R. A. Orr.—p. 429.
Psychosomatic Conditions Observed in 1,000 Consecutive Office Patients. W. O. Johnson.—p. 432.
Summertime Medical Emergencies. O. J. Hurt.—p. 439.
Approach to Problem of Gastric Ulcer or Gastric Cancer. J. E. Hix.—p. 442.
Practical Aspects of Chronic Prostatitis. D. E. Scott.—p. 445.
Abdominal Trauma. R. W. Robertson.—p. 450.

49:479-530 (Nov.) 1951

Review of 2,000 Vaginal Deliveries Under Low Spinal Anesthesia. W. G. Caldwell.—p. 479.
Pulmonary Resection for Carcinoma and Inflammatory Disease of Lung. R. R. Crutcher.—p. 483.
Ear Pain and Its Relation to Costen's Syndrome. A. C. Poweleit.—p. 494.
Acute Appendicitis. J. D. Hancock.—p. 497.
Experiences with Acute Rheumatic Fever Over a Five Year Period. J. A. Little and C. Sullivan.—p. 500.

Neurology, Minneapolis

1:419-496 (Nov.-Dec.) 1951

Gliomas Involving Splenium of Corpus Callosum. B. Schlesinger.—p. 419.
Failures in Migraine Therapy. A. P. Friedman and T. J. C. von Storch.—p. 438.
Neuropharmacologic Considerations in Psychic Seizures. J. E. P. Toman.—p. 444.
*Second Attacks of Acute Anterior Poliomyelitis. A. T. Coffee and W. D. Paul.—p. 461.
Aphasia: Effect of Intravenous Sodium Amytal. P. S. Bergman and M. Green.—p. 471.

Second Attacks of Poliomyelitis.—Patients have been observed who, during the convalescent phase of poliomyelitis, had a recurrence of acute systemic symptoms, in conjunction with an extension of paralysis to myotomes previously unaffected. This situation has been noted weeks, and sometimes months, after the initial phase of the disease. Since man is known to harbor the poliomyelitis virus in his nasopharyngeal secretions and/or gastrointestinal tract as a convalescent carrier for many months following the acute [illegible] the diseas[illegible]ogression or development of additio[illegible]sis during [illegible]riod of three or [illegible] after the [illegible]fection is [illegible] recrudescence of the original infection, whereas those appearing two or more years later are designated as a re-infection. Coffee and Paul add one case of their own observation to 49 previously recorded cases of second attacks of poliomyelitis. The case reported here represents an instance of two distinct attacks, separated by an interval of 24 years. Factors responsible for the occurrence of second attacks of poliomyelitis are as yet little understood, but the authors mention several possible explanations such as antigenically different strains of poliomyelitis virus, inability of some patients to produce antibodies, and loss of immunity in the course of time. A combination of such factors may be present in an individual case.

New England Journal of Medicine, Boston

245:629-670 (Oct. 25) 1951

*Use of Propylthiouracil in Hyperthyroidism and Diabetes: Study of 41 Cases. B. D. Bowen and A. R. Lenzner.—p. 629.
Congenital Syphilis in Massachusetts. N. J. Fiumara.—p. 634.
Aerobic Actinomyces Septicemia: Report of Case. P. M. Kohn, M. Tager, M. L. Siegel and R. Ashe.—p. 640.
"Wetherbee Ail": Inheritance of Progressive Muscular Atrophy as Dominant Trait in Two New England Families. M. R. Brown.—p. 645.
Diseases of Muscles. H. R. Viets and M. R. Brown.—p. 647.

Propylthiouracil in Hyperthyroidism Associated with Diabetes.—The effectiveness of propylthiouracil in diagnosis and in temporary and permanent control of hyperthyroidism was tested on 41 hyperthyroid diabetics. Hyperplastic hyperthyroidism was present in 11 patients whose average age was 48 years and of whom 6 had a family history of diabetes. Adenomatous hyperthyroidism was present in 29 patients whose average age was 60 years, of whom 12 had a family history of diabetes. One patient had Riedel's struma. When hyperthyroidism preceded diabetes the syndrome was probably a result of multiple hormone action, rapid carbohydrate absorption, and increased caloric intake. When diabetes preceded hyperthyroidism varying degrees of obesity prevailed, associated with a chronic, varying demand for increased calories, especially in patients with adenomatous hyperthyroidism. The most helpful clinical indication of the hyperthyroid state was failure to gain weight after diabetes had been controlled, despite an adequate diet. The average maintenance dose of propylthiouracil for patients with primary hyperthyroidism was 350 mg. daily. Five patients required 600 mg. or more. The average maintenance dose for patients with adenomatous hyperthyroidism was 300 mg. daily. Eight patients required 400 mg. or more. Complete remission of hyperthyroidism for more than one year occurred in four patients. Relapse recurred in two patients to whom propylthiouracil had not been given for several months. Nodules appeared or those already present became enlarged in several patients because of the duration of the treatment. Transitory granulocytopenia, urticaria, and acute thyroiditis either consequent to, or coincident with the therapy, occurred in one patient respectively. No change was observed in the caloric requirement after thyroidectomy as compared with that of the drug-controlled hyperthyroid state prior to operation. Likewise, the insulin requirement before and after operation did not change.

North Carolina Medical Journal, Winston-Salem

12:481-524 (Oct.) 1951

Conservation of Our Aging Population. C. Tibbitts.—p. 481.
Carbon Dioxide Therapy. G. A. Silver.—p. 486.
*Subacute Bacterial Endocarditis: Clinical and Bacteriologic Correlation in Stubborn Case Cured with Massive Chemotherapy. M. P. Tyor, H. L. Izlar Jr. and G. T. Harrell.—p. 488.
*Diagnosis of Mumps Meningoencephalitis. G. E. Prince.—p. 495.
Management of Stasis Dermatitis and Stasis Ulcer. W. T. Watkins Jr. —p. 499.
Clinical Experience with Surital Sodium in Anesthesia. C. R. Stephen and R. Martin.—p. 501.
Clinical Impressions Gleaned from Use of New Intravenous Anesthetic, Surital Sodium. R. L. Wall.—p. 505.
Experience with Male North American Frog Test. W. M. Smethie. —p. 507.

Subacute Bacterial Endocarditis.—Tyor and associates call attention to the drug fastness that develops as the result of treating minor symptoms with chemotherapeutic agents. In vitro sensitivity tests and blood levels serve as a rough guide to therapy. Drug-fastness to penicillin, and probably to aureomycin and chloramphenicol, is a relative phenomenon and may be overcome by massive or combined chemotherapy. In a stubborn and protracted case of subacute bacterial endocarditis, eventual cure was produced by massive doses of penicillin after aureomycin, chloramphenicol, streptomycin, and sulfadiazine, singly or in combination with penicillin, had failed. A total of 1,051,000,000 units of penicillin, 164 gm. of chloramphenicol, 36 gm. of dihydrostreptomycin, 130 gm. of sulfadiazine, and 124 gm. of aureomycin was given to this patient during her illness. In a disease that tends to produce serious damage to the myocardium, kidneys, and central nervous system, vigorous treatment with specific chemotherapy and with supportive measures should be instituted as early as possible, revised as complications arise, and continued until cure is assured. The leukocyte count, erythrocyte count, sedimentation rate, and temperature curve may all be misleading in determining activity of the infection; in the case reported here the symptoms proved the best prognostic guide. Embolic episodes that occur during clinical and bacteriologic remission do not necessarily alter the prognosis or the ultimate outcome. The development of potent chemotherapeutic agents has resulted in the appearance of a new syndrome—healed bacterial endocarditis. As the damaged heart valve is repaired the scar tissue contracts, increasing the valvular defect. More and more patients are now dying from cardiovascular or renal failure weeks to months after bacteriologic cure of the infection has been produced.

Diagnosis of Mumps Meningoencephalitis.—Five patients believed to have mumps meningoencephalitis without parotitis are described. All five patients gave a history of exposure to mumps parotitis two or three weeks before the onset of meningoencephalitis. None had evidence of parotitis at the time of first examination, but one patient had a history of parotitis one week previously, and another patient developed bilateral parotid swelling the day after admission. All patients had fever and vomited. Four patients complained of severe headache, and the other patient was an infant who screamed and rolled his head as if in pain. Only two patients had stiffness of the neck, but none was able to lean forward and place his forehead on his knees. These patients resembled children with early poliomyelitis except for the absence of muscle tenderness. Only one patient appeared to be seriously ill. A history of exposure to mumps, with the development of lethargy, headache, vomiting, and nuchal rigidity in a patient whose spinal fluid contains a high leukocyte count, of which at least 90% are mononuclear cells, strongly suggests the presence of mumps meningoencephalitis. The spinal fluid white cell count often exceeds 200 per cubic millimeter, and the protein content of the fluid may be elevated. The spinal fluid changes are suggestive, but not conclusive. However, a correct diagnosis can be established by physicians in even the smallest communities if they will obtain serum in the acute and convalescent periods and send it to one of the communicable disease centers for mumps complement-fixation tests.

Tennessee State Medical Assn. Journal, Nashville

44:405-450 (Oct.) 1951

Importance of Hoarseness. W. G. Kennon Jr.—p. 405.
Mesotheliomas of Pleura and Peritoneum. A. P. Stout.—p. 409.
Infectious Mononucleosis or a New Entity? R. C. Kimbrough Jr.—p. 412.
Total Gastrectomy. W. T. Tyson.—p. 419.

44:451-492 (Nov.) 1951

SYMPOSIUM ON HEART DISEASE

Heart Disease—Classification and Cause. L. A. Grossman.—p. 451.
The Cardiac Arrythmias. D. Strayhorn.—p. 455.
Modern Concepts in Diagnosis and Treatment of Congestive Heart Failure. S. S. Riven.—p. 460.
Laboratory Aids to Diagnosis in Heart Disease. T. M. Blake.—p. 466.
Ocular Changes in Orbital Cellulitis. O. E. Ballou.—p. 470.

Texas State Journal of Medicine, Fort Worth

47:735-798 (Nov.) 1951

Congenital Lesions of Alimentary Tract in Infants and Children: Personal Cases of Surgical Interest. R. J. White.—p. 740.
Precancerous Lesions of Gastrointestinal Tract. G. M. Underwood. —p. 744.
Esophageal Hiatus Hernia in Older Persons. G. F. Madding and F. M. Spencer.—p. 748.
Roentgenologic Examination of Small Intestine. C. A. Good.—p. 753.
Duodenal Ulcers: Place of Surgical Treatment. G. G. Finney.—p. 756.
Operative Management of Cancer of Colon and Rectum. R. J. Rowe. —p. 760.
Recent Advances in Proctology. J. McGivney.—p. 770.

FOREIGN

Acta Medica Scandinavica, Stockholm

140:317-394 (Sept. 24) 1951. **Partial Index**

Medical Studies in North Greenland 1948-1949: III. Allergic Diseases and Pulmonary Emphysema. M. C. Ehrström.—p. 317.
Id: IV. Enlargement of Liver. Biliary Stone and Peptic Ulcer. Incidence and Etiology. M. C. Ehrström.—p. 324.
*Late Results of Gastric Resection for Gastro-Duodenal Ulcer: Follow-Up Study with Special Reference to Serious Late Complications, Subjective Symptoms and Anemia. A. Drablös, V. Lindén and P. Skjelbred. —p. 327.
*Anticoagulants in Treatment of Coronary Thrombosis. C. Holten.—p. 340.
Pathogenetic Problems in "Acute Leukemic Conditions." N. G. Nordenson.—p. 349.

Gastric Resection for Gastroduodenal Ulcer.—Of 492 patients with peptic ulcer subjected to gastric resection during 1937-1946, 14 died immediately after the operation, an operative mortality rate of 2.8%. Of 30 patients who died from six months to four years after the operation, the cause of the death was known for 22: three died of gastrointestinal hemorrhage, three of gastrocolic fistula, and one of stenosis of the anastomosis. Thus seven patients died of gastric disease or of postoperative complications, a late mortality rate of about 2%. Of the remaining 448 patients, 313 (278 men and 35 women) were reexamined in 1950. Of these, 13 (4.2%) had serious complications referable to the gastrointestinal tract. The number of late deaths and late complications, therefore, was greater than those of earlier investigations. Eighteen patients (5.8%) complained of severe dyspepsia. Signs of collapse with prostration, cold sweating, and giddiness occurred immediately after meals in 14 patients (4.5%), and hypoglycemic symptoms were observed in 10 patients (3.2%). Anemia was found in 74 men (26.6%) and 14 women (41.2%). The criterion of anemia for men was a hemoglobin value below 13.26 gm. per 100 cc., and for women a value below 11.64 gm. per 100 cc. Of the 313 patients, 145 (46.6%), had no symptoms. Since operative deaths, late deaths, and serious postoperative disturbances occurred in about 20% of the patients, satisfactory results were obtained in about 80%.

Anticoagulants in Treatment of Coronary Thrombosis.—Of 430 patients with acute coronary occlusion, 174 were given anticoagulant treatment with heparin for 24 hours, and with bishydroxycoumarin (dicumarol®) for three weeks. The bishydroxycoumarin dosage was based on frequent determinations of the prothrombin time; the aim was to reduce prothrombin activity to about 30% of normal. Of the 174 patients, 39 (22.5%) died. Of 256 control patients who were not given anticoagulant treatment, 92 (36%) died. This is a significant difference, and the two groups were comparable. With some inadvertent exceptions patients admitted on even days were given anticoagulant treatment, and those admitted on odd days were not. In no case did the apparent severity of the condition or any other circumstance determine whether anticoagulant treatment should be given or omitted. A comparison of the two groups with regard to mortality rate and age showed that the mortality rates in both groups were highest in the patients between 60 and 69 years (17% deaths in the group with anticoagulant treatment, and 43% in the control group). Deaths occurred from the second to ninth day after admisison in 19.5% of the control patients, but in only 11.5% of the treated patients. This significant difference suggested that the effect of the treatment was not entirely due to a reduction of thromboembolic complications, since these complications occur about one week or more after the coronary occlusion. Thromboembolic complications were reduced by anticoagulant treatment from 14% in the control group to 4% in the treated group; those occurring in the treated patients seemed to be less severe than in the control group. Anticoagulant treatment seemed to improve the prognosis significantly in patients who had had earlier attacks of coronary occlusion: of 25 treated patients, 5 (20%) died, while of 32 control patients, 15 (47%) died. The higher death rate in both control and treated patients than in two similar groups reported on by American investigators is due to the fact that the attacks of coronary thrombosis were considered severe in the majority of the Danish patients, but in only one-third or one-fourth of the American patients.

British Heart Journal, London

13:421-584 (Oct.) 1951. **Partial Index**

The Ancient Art of Feeling the Pulse. D. E. Bedford.—p. 423.
Visible Pulsation in Relation to Blood Flow and Pressure in Pulmonary Artery. M. Campbell.—p. 438.
Effect of Deep Inbreathing on Lead III of Electrocardiogram. W. Evans.. —p. 457.
*Prevention of Impending Cardiac Infarction by Anticoagulant Treatment. K. S. Smith and C. Papp.—p. 467.
Oesophageal and Other Leads in Posterior Cardiac Infarction. S. Oram, M. Holt and T. East.—p. 475.
The Oesophageal Lead. C. W. C. Bain.—p. 485.
Significance of Notched Upright T Waves. W. Dressler, H. Roesler and H. Lackner.—p. 496.
Radiology of Acute Pulmonary Oedema. F. Jackson.—p. 503.
Pulmonary Stenosis with Normal Aortic Root. D. G. Abrahams and P. Wood.—p. 519.
Methods for Measuring Resistance at Any Point on Body and for Equalizing Inequalities of Skin Resistance. E. Goldberger.—p. 549.
Insidious Thrombosis of Abdominal Aorta. J. F. Goodwin and E. Petrie. —p. 554.
Systolic Murmurs in 525 Healthy Young Adults. I. M. G. Stewart. —p. 561.

Anticoagulants to Prevent Cardiac Infarction.—While cardiac infarction often comes on without warning, it is sometimes heralded by a prodromal syndrome in which anginal attacks alter their pattern and become worse. The observations of some authors support the concept that a gradually decreasing coronary lumen with increasing myocardial ischemia terminates in infarction and that the fatality rate is lower among patients who show prodromal symptoms than among those who do not. Smith and Papp review the use of anticoagulants in patients with premonitory symptoms to prevent cardiac infarction and give an account of 14 such patients whom they treated with heparin and bishydroxycoumarin (dicumarol®). In seven instances such treatment coincided with progressive improvement, in six no infarction developed, and in the seventh the ensuing infarct was slight although previous infarctions had been severe. From the first few days of treatment the pain that had been increasing in spite of rest and other medicaments gradually diminished and finally disappeared. In the other seven patients, cardiac infarction developed in spite of treatment. Three of this group died, and necropsy in two of them showed extremely advanced coronary sclerosis and ischemia involving a large part of the myocardium. In one of these patients an electrocardiogram before infarction showed only minimal abnormalities representing subendocardial ischemia in spite of widespread coronary arterial narrowing. This may explain the failure of preventive treatment in some patients who have normal or almost normal electrocardiograms.

British Journal of Radiology, London

24:525-580 (Oct.) 1951. **Partial Index**

Some Problems of Radiation Protection. W. V. Mayneord.—p. 525.
Radiological Diagnosis of Salivary Gland Disease. R. G. W. Ollerenshaw and S. S. Rose.—p. 538.
Cleidocranial Dysostosis. W. R. Cole and S. Levin.—p. 549.
Observations upon Lymphopenia of X-Ray Irradiation: Part II. C. H. G. Price.—p. 556.
*Use of Lead Shot for Protection from Gamma Radiation. A. Nightingale. —p. 568.

Lead Shot for Protection from Gamma Radiation.—Protection from gamma rays is usually obtained by surrounding the source with an appropriate thickness of lead. The lead is cast in the form of interlocking bricks, and these are built up into a wall around the radioactive material. If, however, the source is to be placed inside a complex apparatus, e. g., inside the absorption cell in a spectrophotometer, a wall of standard-sized lead bricks cannot always be located to give convenient access to adjustment controls without loss of protection. To overcome these difficulties, continuous "cavity walls" filled with small lead shot have been used. A number of investigations were undertaken to ensure that this use of lead shot does provide adequate protection, and the experiments are described in this paper. It was proved that cavity walls filled with small lead shot may safely be used instead of solid lead for protection against gamma rays, at least in thicknesses greater than 1.4 in. They are not suitable for shielding fixed objects such as photographic material. The diameter of the lead shot should not be greater than the effective diameter of the source.

QUERIES AND MINOR NOTES

CORONARY DISEASE IN DRIVERS OF PUBLIC CONVEYANCES

To the Editor:—*Should a man who has had coronary thrombosis or myocardial infarction or who shows evidence of coronary heart disease return to work as a bus driver? I would advise my patient to procure a less strenuous job not only for his own good but also because of the risk to the public and the liability of the employer in permitting him to drive a bus. I would appreciate your opinion.*

Louis V. Jurich, M.D., New York.

Answer.—It is generally deemed unwise to permit any patient who gives a past or current history of coronary heart disease to drive any public conveyance or to be responsible for any duty that would endanger more than his or her own life. This would, of course, include bus drivers and locomotive engineers.

LIBIDO AFTER HYSTERECTOMY

To the Editor:—*A woman, whose uterus, ovaries, and tubes have been removed, continues to have normal satisfaction from and desire for coitus. Her husband assumes she is unable to react normally, and therefore refrains from intercourse. Is the sex urge necessarily terminated by this surgery?*

M.D., California.

Answer.—The husband is completely wrong in his attitude, and, since his wife has demonstrated to him the incorrectness of his opinion, one wonders whether this is his only reason for refraining from intercourse with her. He should discuss the matter with the wife's physician or gynecologist. Hysterectomy in itself should not lessen libido. As to the role of the ovaries, in the human female the psyche plays a far more important role, and the ovaries often a negligible one. Libido is often actually creased after castration or after the menopause. There are auxiliary factors to be considered.

OW BLOOD SUGAR AND CONVULSIVE SEIZURES

To the Editor:—*A patient, who is six months pregnant, has had some seizures, which were diagnosed as grand mal. Her blood sugar was 45 mg. per 100 cc. on one occasion and 63 and 64 mg. per 100 cc. on two other occasions. What examinations or tests will enable me to make a definite differentiation between grand mal and hypoglycemia?*

Joel L. E. Peterson, M.D., St. Paul, Minn.

Answer.—Time relations of the blood sampling to ingestion of food and to convulsions is not stated. The degree of hypoglycemia observed should not in itself be sufficient to cause convulsive reactions. Convulsions should occur only after a period of fasting and be preceded by symptoms such as hunger, sweating, and weakness. Differential tests would include a four hour blood sugar curve, blood sugar and clinical response to the injection of insulin, and an electroencephalogram, made preferably with the patient fasting.

RIVERS' COCKTAIL AND ACUTE ALCOHOLISM

To the Editor:—*Please tell me the ingredients and method of use of Rivers' cocktail for alcoholic patients.*

E. M. Henderson, M.D., Nassawadox, Va.

Answer.—Rivers' cocktail, also known as the Philadelphia cocktail, is used for detoxification in acute alcoholism, provided the patient's physical condition can stand an intravenous injection of bulk solution. As used now, the solution injected consists of 1,000 to 2,000 cc. of 10% dextrose in isotonic saline solution, which can be obtained for intravenous purposes from any of the large hospital supply companies. After the drip, intravenous flow is started, and as it goes on, 100,000 to 200,000 units of thiamine hydrochloride (vitamin B_1) and 25 units of insulin are introduced into the tubing. Candy, heavily sugared orange juice, and concentrated glucose for intravenous administration should be available if mild insulin shock reactions occur. It is sometimes necessary to repeat this procedure in four hours.

LECITHIN AND CORONARY INSUFFICIENCY

To the Editor:—*A friend who had a coronary occlusion claims that he was relieved of severe pains in all extremities by taking daily one teaspoonful of lecithin in cereal. This is marketed by the Glidden Company, in whose brochure are described the merits of lecithin in atherosclerosis in furnishing the necessary choline and inositol. The soybean is said to be rich in lecithin. What can you tell me about this?*

I. Fleiss, M.D., New York.

Answer.—It is not likely that lecithin added to the diet would have any immediate or early effect on the pains of coronary insufficiency. It is possible that there may be a remote benefit from its use, but this has not yet been proved. The natural tendency of coronary insufficiency to decrease, and not infrequently to disappear entirely, through the spontaneous development of a more adequate collateral coronary circulation makes dubious the value of therapy of coronary heart disease that has not been clearly proved to be beneficial. One should remain skeptical and yet open-minded about all such treatment.

PERINEURAL FIBROSARCOMA OF THE BREAST

To the Editor:—*A woman, 22, had a small nodule in the right breast removed in November, 1948. The biopsy results were negative for malignancy. She returned, Jan. 1, 1951, with reddened subcutaneous nodules on each side of the old incision. She was admitted to the hospital for removal of the involved area, and a biopsy revealed perineural fibrosarcoma. Although the pathologist suggested either simple mastectomy or wider local excision, she was subjected to a radical mastectomy, and no residual tumor was found throughout the breast or axillary lymph nodes. Now she is presumably six weeks pregnant. Assuming she had a slow-growing type of sarcoma that was locally invasive, the problem arises as to whether to let her continue with pregnancy or to interrupt it by dilatation and curettage.* *M.D., Alabama.*

Answer.—This patient may safely be permitted to continue her pregnancy. There is no evidence whatever that pregnancy or hormones will bring about a return of the fibrosarcoma. It is almost certain that the entire diseased area was removed by the operation and that there are no remote metastases. Incidentally, a radical mastectomy was heroic treatment for the perineural fibrosarcoma.

COMMERCIAL OXYGEN VERSUS MEDICAL OXYGEN

To the Editor:—*A patient contends, on seemingly good authority, that there is no difference between the oxygen sold for medical use and that employed in industry, despite the tremendous difference in cost. Is there a difference?*

Elmer A. Kleefield, M.D., Forest Hills, N. Y.

Answer.—There is no difference between so-called medical oxygen and commercial oxygen. This was checked with two firms who supply both medical and technical oxygen and two prominent [illegible]ologists. There may be differences in the valve thread and color of the container.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted [illegible]